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# THE SIGHT-SAVING REVIEW

SPRING, 1958

PUBLISHED QUARTERLY BY
THE NATIONAL SOCIETY FOR THE
PREVENTION OF BLINDNESS, INC.

# THE SIGHT-SAVING REVIEW

*Official Quarterly of the*

**NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, INC.**

1790 Broadway New York 19, N.Y.



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*Subscription $2.50 a year; single copies 65 cents*

Published quarterly by the National Society for the Prevention of Blindness, Inc. Office of Publication, 1315 Cherry Street, Philadelphia 7, Penna.

Editorial Office, 1790 Broadway, New York 19, N. Y. Correspondence concerning the REVIEW should be addressed to the Editorial Office.

*Entered as second class matter at Philadelphia, Pa., Post Office*

PRINTED IN THE UNITED STATES OF AMERICA

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Volume XXVIII Number 1

Spring, 1958

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# CLINICAL COURSE IN EYE NURSING

## at Emory University

ELIZABETH MILLS
Head, Department of Medical-Surgical Nursing
School of Nursing, Emory University, Georgia

**Emphasis is placed not only on the special skills needed in the care of eye patients, but on the nurse's role as a teacher and eye health consultant in the community.**

THE aim of the Emory University School of Nursing is to graduate students to practice, in beginning positions, in any area of the profession, or wherever nursing care is needed. Basic to this aim is the belief that professional education for nurses today includes technical and manual proficiency; knowledge and understanding of medical and related sciences. But we believe it goes further than this. Nurses need to appreciate the purpose and value of their education in such a way that they may also aid in prevention of illness and disability; in the total educational and rehabilitation program of the health team working to improve health standards for all; and in giving to people in general a feeling of self worth and well being.

We hope that the students who graduate from Emory will be able through experience and further education to see themselves clearly not only as nurses actively practicing in the various areas but in their roles in the community as health consultants and citizens.

### Importance of Eye Training

Educational programs today are crowded and must be organized carefully. Planning for clinical courses in the various medical specialties is difficult, and only those to which nursing care and knowledge make a significant contribution are selected. Ophthalmology, it seems to us, is a highly pertinent area. For many years training and experience in this field have been included in our clinical nursing program. Ophthalmology cuts across all age groups, from the newborn to the geriatric patient. The nurse, through skilled observation of the infant, may be the first to identify a congenital defect. Her knowledge of the physiology of the eye may enable her to recognize a muscle imbalance in a small child. Through her understanding of cataract surgery, and the safety and effectiveness with which this procedure is performed today, she may be one person who can give simple, clear information to an aged person who for one reason or another fears the operation.

The nurse is in a position to assist teachers in the public schools to sharpen their own skills in the observation of pupils. She can clarify the kinds of symptoms children with eye trouble are apt to present and point out certain behavior patterns which may indicate eye difficulties.

We believe that in the early diagnosis and control of glaucoma not only ophthalmologists but all physicians and health officers recognize with gratitude the intelligent nurse's assistance. In the safety programs, at home, at work or at play, her knowledge and understanding of eye hazards are important factors.

### Service to Community

In areas of prevention and rehabilitation nurses must be well aware of available community resources, official and nonofficial. They must know how to answer questions simply and factually; how to refer people to proper sources; and how to recognize "teaching moments" in agencies or in the community at large. This is the premise upon which our three-week clinical course in eye nursing is planned. In addition, eye conditions and nursing care are integrated throughout the school's program. In infant care recognition of eye defects and anomalies is taught as part of observation of the newborn. In pediatrics students care for children with such conditions as muscle imbalance, retinoblastoma and trauma. In public health nursing they assist in vision-testing programs, in interpretation to and teaching of patients and families, including geriatric patients, many of whom present marked visual loss.

### Objectives of Clinical Course

In our clinical course the student gains knowledge, understanding, appreciation and skill as a basis for safe, effective care in eye conditions; also understanding of her role in prevention and control of the more common visual problems. Specifically, the four objectives are:

1. To learn to apply principles of practice in the nursing care of eye patients, and to give reasons for action without referring to resource materials.

2. To learn to make a plan of nursing care and to carry out, evaluate and modify that plan safely and effectively.

3. To learn to function as a member of the ophthalmology health team; and to learn the role of the nurse in prevention and control of eye conditions.

4. To gain sensitivity and some insight into the psychological needs of people with visual difficulties.

### Orientation of Student

The entire first day of the student's assignment to the eye unit is spent in orientation. Since all clinical courses at Emory University integrate theory and practice, students study eye nursing in terms of specific patients assigned to them. Because this three-week period includes a comprehensive overview of the entire field of eye nursing they are given a course outline which introduces them to the specific learning experiences they will have. A pre-test in anatomy and physiology of the eye, given during the first hour, provides a basis for determining how much time must be spent in review.

In the study of specific patients the focus is always on the affected part of the eye, the pathogenesis or trauma and the effect this is having on vision. The kinds of patients selected for study include:

(1) those commonly treated in the eye clinic for injuries, burns, infections, congenital anomalies (diagnostic), muscle imbalance, glaucoma, errors of refraction, and

(2) those having conditions for which direct nursing care is indicated:

cataract; retinal detachment; glaucoma; iritis, cyclitis; inflammatory conditions of the layers of the eye; keratoplasty; neoplasms.

### Preparation for Patient Care

The particular patients selected for nursing care beginning the second day of the course are discussed so that the students will have some understanding of the diagnosis, the plan of treatment and individual needs. This part of the orientation usually takes the entire morning. The afternoon is spent in teaching and practicing specific procedures and techniques which nurses perform for eye patients. These include instillation of eye drops; application of eye ointments and hot and cold compresses; changing of eye dressings or assisting physician with examination or dressing; and first aid irrigation of an eye.

Students practice such skills as feeding a patient who has his eyes covered or one who has marked visual loss; turning, moving and positioning patients who have had eye surgery; assisting them out of bed and walking with them. Students usually cover their eyes with a ring mask and practice these skills with each other so that they will have a better understanding of how people with temporary or permanent visual loss relate to their environment. Throughout the entire course time is spent discussing communication skills, verbal as well as non-verbal, so that patients are given the security and support they need.

### Study of Drug List

In order further to facilitate learning and save time for patient care and study the students are given a comprehensive outline of drugs used specifically in eye conditions and other drugs used for relief of pain and discomfort. This list describes the nature of the drug, its primary action, expected effect, usual dosage, toxic or untoward effect. This enables students to master information quickly.

Study guides and nursing care plans are used with all patients. Students are assigned to patients before, during and after surgery. In most cases they remain in the operating room, where the eye surgeon teaches and clarifies so that they understand the nature of the procedure. The students teach their patients and family members specific aspects of home care and the special precautions to be taken until the eye is completely healed.

In addition to teaching during surgery the ophthalmologists instruct in the clinic and as students accompany them on their rounds. The head nurses in the clinic and hospital unit participate actively in student teaching. The clinical instructor devotes her full time to the students.

The role of the public health nurse is integrated with the study of every patient. In addition to experience in the clinics and hospitals students visit the orthoptic clinic, the agencies concerned with rehabilitation of the blind, classes for the partially seeing and the like. Discussion periods are planned for an orientation of nurses to agencies interested in preventing blindness. Particular emphasis is placed on the National Society for the Prevention of Blindness, its purposes, publications and activities.

At the completion of this course students always express deep satisfaction gained from contacts with eye patients. They almost invariably say that they have learned much about

nursing care that they could never have learned with other patients. The time is limited and the material to be covered comprehensive, but we believe that this training is indispensible in preparing our students for constructive activity in terms of the patients and communities they are being educated to serve.

## NATIONAL SOCIETY CELEBRATES 50th BIRTHDAY

The 50th Anniversary Conference of the National Society for the Prevention of Blindness was held at the Bellevue-Stratford Hotel, Philadelphia, March 12–14. The theme of the three-day meeting was "Conquer Blindness—Mission at Mid-Century."

At the opening session on Wednesday, March 12, President Mason H. Bigelow welcomed the delegates and reviewed the advances in eye health and protection during the 50-year period.

General subjects at the conference discussions included: the volunteer in prevention of blindness; vision—keynote of modern industry; teaching partially seeing children at various grade levels; value of professional cooperation in eye patient care; reports of scientific progress in control of eye diseases; and public relations in local prevention of blindness work. Many leaders in the fields of medicine, education and industry presented papers and participated in the discussions.

The closing session on Friday, March 14, was a luncheon at which Robert F. Irwin, Jr., prominent Philadelphia attorney, presided and Mayor Richardson Dilworth extended greetings. Mr. Irwin has made outstanding contributions to sight conservation through his membership on the board of the Pennsylvania Working Home for the Blind and the board of the National Society. The principal speaker at the luncheon was Norman V. Lourie, deputy secretary for social welfare, Pennsylvania Department of Welfare, Harrisburg.

A variety of exhibits presented by manufacturers of optical instruments and various types of equipment, publishers, and agencies concerned with eye health were on view.

## REPORT ON PHOSPHENATOR

Captain Frederick S. Davis, Jr., U. S. Army Medical Corps, and Leonard Kurland, M.D. have conducted a research study at Walter Reed Army Hospital to determine the true value of the phosphenator, a new instrument designed for detection of glaucoma. In a report presented at the October 1957 annual meeting of the American Academy of Ophthalmology and Otolaryngology Captain Davis described this instrument as consisting of an applicator which is placed on the temples in such a way that the retina is stimulated by an electric current. The response to this stimulation in the normal eye is said to be a sensation of bluish light, while if the person has glaucoma he is supposed to see a yellowish orange color.

In a carefully controlled experiment carried out on 185 eyes, the investigators were able to demonstrate that the instrument was useless, Captain Davis said. Statistical analysis of their data verified their conclusion that the instrument was not only of no value but, since it may be used by uncritical and untrained workers, it may lead to a false sense of security.

# PROGRESS IN GLAUCOMA CONTROL

WILLIS S. KNIGHTON, M.D.
New York, N. Y.

**The chairman of the National Society's Committee on Glaucoma reports on 1957 activities aimed at early detection of the disease.***

DURING 1957 the National Society, with the guidance of the Committee on Glaucoma, intensified its campaign for the early diagnosis of glaucoma—the key to preventing blindness from this disease.

In order to alert and educate the public to the need for early detection, the Society stimulated community programs for checking the eyes of men and women 40 years of age and older. The results of such tests may indicate the presence of glaucoma long before the patient has any noticeable symptoms. As reported from time to time in this journal, programs of this nature have been carried on in various communities: in California under the direction of the Society's California Chapter; in Bridgeport, Connecticut by the Connecticut Chapter; and in Rochester and Port Chester, New York. At the University of Tennessee College of Medicine in Memphis, 1,200 hospital patients under treatment in services other than eye were checked for glaucoma.

The data from all these projects show that more than two per cent of those examined had early glaucoma. Applying this percentage to the total population over 40 indicates a potential glaucoma population of over 1,000,000. This startling figure shows the urgent need for a stepped-up program of detection and education.

The National Society has presented exhibits at the American Academy of General Practice, the American Medical Association, and the American Public Health Association (combined attendance approximately 25,000) to demonstrate tests for glaucoma which should be included in routine physical examinations given by family doctors. Enlisting their cooperation and help will increase the chances of getting patients with possible symptoms of glaucoma under care early. As a result of these exhibits many physicians are requesting information from the Society about where to turn for instruction in administering the tests. State medical societies in Pennsylvania, Delaware, Arkansas, Texas and New Mexico have received help in setting up similar exhibits to alert their members to this problem.

The Society's film, "Glaucoma—What the General Practitioner Should Know," is an invaluable aid in the program of professional education. Seventeen prints, distributed from the Society's office, are in constant use for supplementing lectures to physicians, nurses and public health workers. Since its production in 1951 the film has been shown to audiences totaling

* Presented at the Annual Membership Meeting of the National Society for the Prevention of Blindness, New York, December 13, 1957.

27,000 in 46 states, the District of Columbia, Territories of Alaska, Hawaii, Canal Zone, Puerto Rico, and in six foreign countries. Additional copies are distributed by the American Medical Association, several state health departments, chapters of the Society and local prevention of blindness societies. Seven prints in Spanish are located in various Latin American countries.

Many aspects of the glaucoma patient problem are of great concern to ophthalmologists. To provide for an informal discussion of some of them the Society has arranged, during the meeting of the American Academy of Ophthalmology and Otolaryngology, an annual get-together of eye specialists who have expressed an interest in exchanging ideas and getting advice from those who have made outstanding contributions in certain areas. The 1957 session was attended by 61 ophthalmologists from all over the United States.

The Society receives requests from medical schools for illustrated material to supplement glaucoma lectures to undergraduate medical students. The Committee on Glaucoma has arranged for the preparation of such material, to be widely distributed. The inclusion of sufficient information on glaucoma in basic medical training will be a great help in furthering early detection.

To educate the public about glaucoma the Society distributes each year thousands of pamphlets explaining the nature of the disease. A film, "Hold Back the Night," produced by the Canadian National Institute for the Blind for lay audiences is widely used, especially to supplement talks to service clubs and various community organizations. Many glaucoma patients get in touch with the Society during the year for answers to their many questions.

Expansion of the glaucoma control program is urgently needed because greater numbers of people are living to the ages when the disease is more prevalent. Increased support for this work is vitally important.

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## GLAUCOMA SURVEY AT FAIR

A new type of glaucoma survey conducted at a county fair for ten continuous days is described in the *American Journal of Ophthalmology* for November 1957. This ambitious project was carried out at the San Diego County Fair from June 28 through July 7 under the sponsorship of the county medical society. The San Diego Ophthalmological Society furnished a pool of 23 ophthalmologists and 40 assistants to man the glaucoma booth for 12 hours daily.

As described by Dr. John L. Power, chairman of the Glaucoma Survey Committee, in his letter to the *Journal*, the enthusiastic public response to the survey is "a real challenge to the ophthalmologists to make a more determined effort to find persons with early glaucoma who can be saved from loss of vision by medical and surgical treatment."

Just under 4,000 persons were tested for visual acuity and for ocular pressure, using the Schiøtz tonometer. Of this number 196 were found to have pressure of 28 mm. Hg or higher in one or both eyes, and were advised to consult their ophthalmologist. The follow-up study at one month showed that 35 suspects had done so, and 14 of them proved to have glaucoma.

# CAUSES OF BLINDNESS IN CHILDREN OF SCHOOL AGE

C. EDITH KERBY

Associate for Statistics and Analysis
National Society for the Prevention of Blindness

**A report based on records of 4,426 of the estimated total of 7,000 blind students in the United States, the District of Columbia and the Territory of Hawaii in 1954–55.**

THIS report is one in a long series of studies by the National Society of causes of blindness in children of school age dating back to the school year 1932–1933*. Their purpose is to provide a basis for determining the most important problems in preventing blindness in children. Repeated at frequent intervals, they have also enabled us to evaluate the prevention measures that have been put into operation, and to take note of new causes requiring attention as they appear.

The cooperation of residential schools for the blind and city school systems having special education programs for the blind, which have provided individual diagnostic records, has made it possible for the Society's statistical division to continue these studies. The cases reported represent a majority of the children currently enrolled in all such school units. The diagnoses of eye conditions have been made by a large number of ophthalmologists who perhaps differ in their professional judgments. A standardized method of statistical analysis and the classification worked out by the Committee on Statistics of the Blind have been utilized.

* First report published for the school year 1933–34. Berens, Conrad; Kerby, C. Edith; and McKay, Evelyn C. The Causes of Blindness in Children—Their Relation to Ophthalmology. *Journal* of the American Medical Association, 105:24, December 14, 1935. p. 1949–1954.

### Age Group

The blind covered in these studies are children of kindergarten through senior high school grades. The present report covers records for 4,426 of the total of nearly 7,000 (estimated) blind students in the United States, the District of Columbia and the Territory of Hawaii in 1954–55.

The special schools occasionally enrol a child of nursery school age and some students are kept on beyond 20 years of age, but 93 per cent fall between 5 and 19 years of age. In most cases (87 per cent) the age at onset of blindness was under 5 years. About 52 per cent were already blind at birth and many others who became blind in the early years of life were also affected by some influence operating before birth. Throughout this entire series it has become increasingly evident that *factors affecting early development of the eyes constitute the most important problem in preventing blindness in children.*

TABLE 1

Percentage Distribution of Blind Children of School Age in 1954–55 by Age and by Age at Onset of Blindness

| Age Group | | Age as of 12/31/54 | Age at Onset of Blindness |
|---|---|---|---|
| Before birth | | | 51.5 |
| At birth | | | 2.6 |
| Under 1 year | | | 25.2 |
| 1 to 4 years | | .3 | 7.6 |
| Total—Under 5 years | | .3 | 86.9 |
| 5 to 9 years | | 30.4 | 6.4 |
| 10 to 14 years | | 36.2 | 2.9 |
| 15 to 19 years | | 26.3 | .7 |
| 20 years and over | | 6.4 | .. |
| Age not reported | | .4 | 3.1 |
| TOTAL—All Ages | Per cent | 100.0 | 100.0 |
| | Number in study | 4,426 | 4,426 |

### Changes in Blindness Rates

From our count of records supplied by reporting units and the enrolment figures for non-reporting units as furnished by the American Printing House for the Blind, we found that there were nearly 7,000 blind children among the 35,000,000 pupils attending school in 1954–55, a prevalence rate of approximately 20 per 100,000.

For the early years of the study enrolment data were inadequate. Although the approximate figures shown here (see Chart and Table 2) seem to indicate that between 1933–34 and 1941–42 the blindness rate increased slightly (from 21.2 to 22.3) the number of schools and the geographic areas from which reports were received changed so markedly during this period that apparent slight changes in rates are without significance. But by 1951–52 the estimated rate had decreased to 18.8. As the chart shows, it might have continued to decrease except for the appearance of a new eye disease (retrolental fibroplasia).

### Sex as a Factor

As in previous years, the blindness rate for 1954–55 was appreciably higher for boys than girls. Population estimates of the Bureau of the Census for 1955 show an average of 104 males to 100 females of school age, but our ratio for the blind is 131 boys to 100 girls. This would indicate a blindness rate for boys that is 26 per cent above that for girls.

A comparative analysis by sex and cause of blindness, based on data in our 1945–46 report, showed that the rates for almost all causes were higher for boys. This was true not only for blindness due to injury, which might be expected because boys engage in more dangerous activities, but for the defects of prenatal origin as well.

### Rates by Race

From time to time approximate blindness rates have been estimated for broad racial groups but, due to the growing practice of dropping the item "race" from records, it is no

TABLE 2

**Estimated Blindness Rates, by Cause for Children of School Age, in Selected Years**

| Etiology | Rate per 100,000 Pupils Enrolled | | |
|---|---|---|---|
| | 1933–34 | 1941–42 | 1954–55 |
| **Infectious Diseases** | 6.1 | 5.4 | 1.5 |
| Ophthalmia neonatorum | 2.3 | 2.4 | .3 |
| Syphilis | 1.1 | 1.2 | .3 |
| Toxoplasmosis | .. | .. | .1 |
| Rubella | .. | .. | .1 |
| Meningitis | .4 | .5 | .1 |
| Tuberculosis | .1 | .1 | .1 |
| Other and not specified | 2.1 | 1.2 | .5 |
| **Injuries** | 1.6 | 1.7 | 1.0 |
| **Poisonings** | * | * | 3.8 |
| Excessive oxygen | .. | .. | 3.8 |
| Other | * | * | * |
| **Tumors** | .5 | .6 | 1.0 |
| **General Diseases** | .3 | .3 | .1 |
| **Prenatal Influence** | 10.8 | 11.7 | 11.2 |
| Genetic origin (established or presumed) | 2.4 | 2.8 | 2.9 |
| Cause not specified | 8.4 | 8.9 | 8.3 |
| **Etiology Undetermined or Not Specified** | 1.9 | 2.6 | 1.3 |
| Total—All causes Rate | 21.2 | 22.3 | 19.9 |
| Number in study | 2,702 | 4,604 | 4,426 |

* Less than one-tenth of one per cent

longer feasible to produce data by race. The differences are of interest, although they probably cannot be attributed to the racial factor per se. Variations in environment, especially those affecting health status of individuals such as their access to medical facilities, are reflected in the following comparisons, which are from our 1951–52 study.

As of 1951–52 the estimated rate for negroes was nearly 20 per cent above that for whites (21.1 vs. 17.7 per 100,000). The higher rates were found chiefly in blindness due to the infectious diseases (syphilis and ophthalmia neonatorum) and to defects of prenatal origin. However, it is also true that there has been a decrease in blindness rates for these causes among negroes over the period covered by these reports.

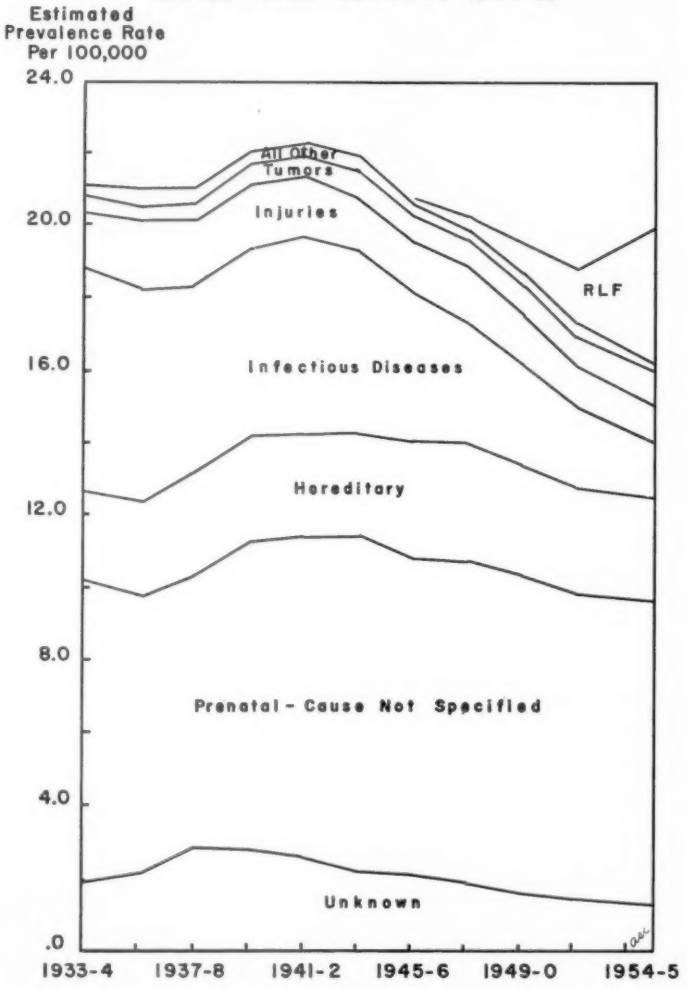
Causes for which the negro rates were lower than those for whites are "poisonings, excessive oxygen" and "tumors." It now seems probable that this is one instance in which *limited* access to advanced medical facilities proved a boon to negro children. (See discussion of excessive oxygen and retrolental fibroplasia.)

### Causes of Blindness

Data in the present report show causes among children of school age as of 1954–55 and changes that have oc-

BLINDNESS RATES IN THE SCHOOL AGE POPULATION BY CAUSE

SCHOOL YEARS 1933-34 TO 1954-55




curred since 1933–34. Also, we are concerned here only with causes of blindness occurring from before birth through the adolescent years.

The basic tabulation in our reports on causes of blindness is a detailed cross-classification showing distribution of cases of blindness both by types of eye affections and their causes. That table shows at a glance how eyes are affected and by what causes. Only selected data from it can be shown

TABLE 3

Causes of Blindness in Children of School Age by Etiology, 1954–55

| Etiology | Per Cent | |
|---|---|---|
| | Total Pupils | New Pupils |
| **Infectious Diseases** | 7.4 | 4.8 |
| Ophthalmia neonatorum | 1.6 | .1 |
| Syphilis | 1.4 | .6 |
| Toxoplasmosis | .7 | .6 |
| Rubella | .6 | .3 |
| Meningitis | .6 | .3 |
| Tuberculosis | .4 | .4 |
| Other and not specified | 2.1 | 2.5 |
| **Injuries** | 4.9 | 4.3 |
| Sharp or pointed objects | 1.2 | .6 |
| Blows or falls | 1.0 | .4 |
| Firearms, airguns, fireworks, other explosives | .9 | .9 |
| Burns | .3 | .2 |
| Other and not specified | 1.5 | 2.2 |
| **Poisonings** | 19.3 | 28.5 |
| Excessive oxygen | 19.3 | 28.5 |
| Other | * | .. |
| **Tumors** | 5.1 | 5.0 |
| **General Diseases** | .7 | .6 |
| **Prenatal Influence** | 56.1 | 49.1 |
| Genetic origin (established or presumed) | 14.3 | 11.1 |
| Cause not specified | 41.8 | 38.0 |
| **Etiology Undetermined or Not Specified** | 6.5 | 7.7 |
| Total—All Causes — Per Cent | 100.0 | 100.0 |
| Total—All Causes — Number in study | 4,426 | 793 |

* Less than one-tenth of one per cent

here because of limitations of space.* (See Chart and Tables 2, 3, and 4.)

In the chart it will be noted that while the general trend in the blindness rate for the school age is downward this is not true for all causes. Substantial decreases have occurred in cases due to infectious diseases and those due to injuries. Other causes have remained more or less stationary, or even increased. The reasons behind the successes and failures in preventing blindness, as seen in these figures, can best be explained by considering the various causes separately.

### Infectious Diseases

The chart shows a 75 per cent decrease in the rate of blindness due to infectious diseases between 1933–34 and 1954–55. The detailed figures seen in Table 2 prove the effectiveness of public health measures in preventing blindness due to infections such as

* The cross-classification by cause and tables showing other factors are available (NSPB publication No. 110A)

ophthalmia neonatorum. A comparison of the figures for the latter cause as of 1906–07 and 1954–55 is even more impressive. Back in 1907 ophthalmia neonatorum accounted for 28.2 per cent of the blindness in a sample group of 206 children in schools for the blind. Although it had been demonstrated that use of prophylactic drops in the eyes of newborn infants would prevent this disease, prophylaxis did not become general practice until this and other control measures had been made mandatory by state public health laws. As state after state passed legislation on this topic, cases of blindness from ophthalmia neonatorum became less and less frequent among new pupils entering the schools for the blind. By 1954–55 the percentage of ophthalmia neonatorum cases among new pupils entering schools for the blind had dropped to 0.1 per cent.

Similar public health measures, such as requiring premarital and prenatal blood tests and treatment of affected parents, have effected a drop of 73 per cent in blindness due to syphilis in this age group.

For still further evidence of the value of improved health procedures in preventing blindness we can point to the fact that there have been no new cases of blindness due to diphtheria, smallpox or typhoid in these studies for several years and that new cases due to meningitis, measles and tuberculosis are seldom seen.

Now that medical research has disclosed that rubella (German measles) during pregnancy of the mother and toxoplasmosis can cause blindness in children, these have been added to our listing in the infectious disease group. But more important is the fact that public health authorities are alerted and working on prevention of blindness from these diseases.

### Injuries

The eye accidents responsible for blindness in these children occurred most frequently in play or sport, but there were also a considerable number of birth injuries. The greatest hazards to the eyes of children are (a) sharp or pointed objects, such as sticks, wires, and knives, (b) severe blows or falls (as when a child is struck by an auto, or a bat, ball, rock; or falls from a tree, swing, window, horse), and (c) objects or substances having an explosive action, such as guns and dynamite caps.

Blindness from injury is decreasing. Measured by our estimates the rate of child blindness due to accidents decreased between 1937–38 and 1954–55 (see chart), by 47 per cent. These figures show the effect of the safety education aimed at parents and children and of the legislative controls set up to regulate use of the more dangerous items such as fireworks and BB guns.

Another item of special interest, particularly to physicians, is the indication that cases involving sympathetic ophthalmitis in the uninjured eye appear to be diminishing at an even greater rate than the average for all injuries. This fact should, however, serve as a reminder that our data on blindness due to trauma cannot be used as an indication of the extent or seriousness of eye hazards to children. The figures given here necessarily include only cases in which both eyes are very badly affected. Accidents involving injury to one eye only would be excluded, even if the eye was enucleated or all vision lost, as would

cases resulting in quite serious damage to both eyes which falls short of meeting the definition of blindness.

### Heredity

A routine check of names in our own alphabetical file and questions to school superintendents regarding relationships showed sufficient family history to indicate that 14 per cent of blindness among children of school age could be presumed due to heredity. This figure is believed to be underestimated, because information needed to establish the genetic origin of cases in our files is often missing or may be late in coming to light. If members of affected families are widely scattered their case records are not likely to include significant facts concerning relatives. Hence, there is need for a centralized file in which records of persons with serious eye defects known or suspected to be hereditary may be brought together on a family basis. Proof of genetic patterns established in this way would provide a sound basis for counseling potential parents in the family groups. The fact that family records are not readily available now may explain why the hereditary blindness rate shows no tendency to decrease.

### Excessive Oxygen and Retrolental Fibroplasia

Retrolental fibroplasia deserves special mention in any discussion of causes of blindness in children. The full effect of this eye disease on the blindness rate for the school age group cannot even yet be seen in our data, but it is now possible to present the essential facts of its short dramatic history.

Retrolental fibroplasia (meaning fibrous tissue behind the lens) is the name given to this disease by its discoverer, Dr. T. L. Terry, a Boston ophthalmologist. It was subsequently shown that his early cases had been seen in a late stage of the disease and that the disease actually starts in the retina, where developing blood vessels are damaged and, in the advanced stage, the scarred retina becomes decomes detached and floats forward toward the lens.

Dr. Terry first recognized this affection in 1941 as a distinctly new type of maldeveloped eye in infants, and noted that it occurred in premature babies. Soon thereafter it began to appear sporadically in premature infants in other cities in the United States and in some foreign countries. In the United States its frequency increased rapidly, so that by 1950 it accounted for approximately half of the blindness in children of preschool age*. No effective treatment had been found up to that time. Of the many suspected causes none had been definitely incriminated**.

Two events in 1951 contributed substantially to the solution of the problem of what causes retrolental fibroplasia. One was initiation of a series of conferences of interested ophthalmologists, pediatricians, etc. leading to substantial coordinated research; the other was the clue provided by physicians (M. Lelong in France, V. M. Crosse in England, and K. Campbell in Australia) to oxygen as the possible cause of retrolental fibroplasia. By 1952 evidence that

* Kerby, C. Edith. Blindness in Preschool Children. *Sight Saving Review*, Vol. 24, p. 15, Spring 1954.

** Zacharias, Leona. Retrolental Fibroplasia: A Survey. *American Journal of Ophthalmology*, 35:10, October 1952. p. 1426–1454.

oxygen administered to premature babies routinely and in high concentrations caused retrolental fibroplasia began to appear in preliminary reports from investigators.* By 1954 substantial research had established proof of this association of excessive oxygen and retrolental fibroplasia** and pediatricians were advised to curtail its use.

As word of this recommendation spread the effect was quickly reflected in very substantial reductions in the number of new cases of blindness due to retrolental fibroplasia reported to agencies for the blind. Hence it may be anticipated that (1) the number of blind in the preschool age, which had begun to fall off as of 1954, should be down to about its pre-retrolental fibroplasia level by 1960; (2) the number of blind children entering braille schools and classes will continue to increase until 1960 and then drop off.

### Tumors

Blindness due to tumors of the eye or brain accounted for 5 per cent of the cases. This is the only known cause other than retrolental fibroplasia which has shown a tendency to increase. As its increase began about the time of the appearance of retrolental fibroplasia, which is not easily differentiated from retinoblastoma, there is reason to suspect that some cases attributed to tumor may actually have been retrolental fibroplasia. However, some of the increase may be due to the greater chance of survival of a child after removal of tumors in the eye or brain due to improved surgery.

### Unknown Prenatal Factors

At least two out of five of the cases of blindness in children of school age must still be classified as due to an unspecified prenatal influence. It is quite possible that if intensive study were made soon after birth of all infants showing evidence of congenital eye defects, more cases of this type might be found to be due to a known cause such as heredity or some infectious disease of the mother during pregnancy. Nevertheless, the fact that the proportion of such cases included in each successive study has remained high strongly suggests that there must be other factors, not yet identified, which can cause maldevelopment of eyes. What these factors are should be determined by research similar to that which solved the problem of retrolental fibroplasia. It is quite possible also that information brought to attention in the retrolental fibroplasia studies could be the basis for initial investigations into other causes of maldevelopment of eyes. Proof of causal relationships must of necessity precede the introduction of appropriate preventive measures.

### Incomplete Records and Services

In our studies many cases are classified as "unspecified" as to cause. An ophthalmologist seeing a child at a school for the blind for the first time may be at a disadvantage in determining the cause of blindness. If the eye affection he sees has progressed to an advanced stage, he cannot be expected to determine exactly how it

* Patz, A.; Hoeck, L. E.; and De la Cruz, E. Studies on the Effect of High Oxygen Administration in Retrolental Fibroplasia. 1. Nursery Observations. *American Journal of Ophthalmology*, 35:9, September 1952. p. 1248–1253.

** Kinsey, V. Everett, and Hemphill, F. M. Etiology of Retrolental Fibroplasia and Preliminary Report of Cooperative Study of Retrolental Fibroplasia. *Transactions* American Academy of Ophthalmology and Otolaryngology, 59:1, January-February 1955. p. 15-24.

started or what caused it unless he has access to facts regarding health and family history available from parents and from physicians, hospitals or agencies that have previously served the child. In many cases school superintendents can obtain this information for the examining ophthalmologists if they have a worker on the staff qualified to make the necessary investigations. If not, service of this type can, of course, be supplied by another agency.

A state agency having overall responsibility for services to visually handicapped children would seem to be the logical custodian of medical histories of these children. Its centralized files could be used both by research workers and by agencies giving services to the children. Centralization and sharing of information aids in elimination of gaps and duplications in the health, welfare and educational services needed by the individual child. The time has long passed when a school for the blind would routinely admit any child for braille instruction without inquiring into the nature of his eye affection, the degree of remaining vision and what, if anything, might be done to improve both. Nevertheless, incompleteness of some records sent for inclusion in our statistics indicate that in many schools too little is known about the children's eye conditions. Insufficient follow-through on recommendations for corrective eye care may also be suspected when the only record received for a pupil shows correction recommended many years ago but no later re-examination.

One wonders too whether the school administrators who report that no ophthalmological examination records are available to be copied for use in our studies would not consider this a serious gap in their own files. Diagnostic information could be used by the schools, not only for insuring attention to the children's medical needs, but for better understanding of their visual handicaps by their teachers. The purposes of school staff members would be better served if ophthalmologists examining children would add to the diagnoses detailed analyses of the functional handicaps of each child, by type and degree.

### Types of Eye Affections

Among the types of eye affections seen most frequently in blind children of school age are the various *anomalies of structure* (27 per cent of the total). (See Table 4.) These include buphthalmos, an eye stretched to large size by excessive intraocular fluids, occurring in congenital glaucoma; microphthalmos, the eye which is too small; anophthalmos, the eye which fails to develop at all; coloboma, a cleft in one or more parts; albinism, a lack of pigment; or aniridia, the eye which lacks an iris. In many cases there are multiple structural defects. Most anomalies are quite easily identified in the newborn infant, but some defects (e.g. malignant myopia) are rarely congenital but appear at an early age and progress rapidly.

These structural defects may be reported as inherited, but most often they are simply designated as congenital or prenatal in origin and the cause is not known. This is true also of some other eye affections which may not be evident or may be present only in an incipient stage at birth but progress to blindness years later. Among the latter are congenital cata-

**TABLE 4**

**Causes of Blindness in Children of School Age by Site and Type of Eye Affection—1954–55**

| Site and Type of Eye Affection | | Per Cent of Total Pupils Enrolled |
|---|---|---|
| Eyeball in General | | 30.3 |
| Structural anomalies (multiple 10.0, buphthalmos 6.5, albinism 3.1, myopia 3.0, microphthalmos 1.3, coloboma 0.9, aniridia 0.6, anophthalmos 0.4, other and not specified 1.2) | 27.0 | |
| General degenerative changes | 1.4 | |
| Other and not specified | 1.9 | |
| Cornea (ulcerative keratitis 1.1, interstitial keratitis 0.8, other and not specified 1.4) | | 3.3 |
| Crystalline Lens (cataract 13.1, dislocated lens 0.8) | | 13.9 |
| Uveal Tract (chorioretinitis 3.0, uveitis 2.3, choroiditis 0.8, other and not specified 0.5) | | 6.6 |
| Retina (retrolental fibroplasia 19.3, retinoblastoma 2.4, retinitis pigmentosa 2.2, macular degeneration 1.5, detached retina 0.6, retinitis 0.4, other and not specified 1.2) | | 27.6 |
| Optic Nerve, Optic Pathway and Cortical Visual Centers (optic nerve atrophy 7.3, retrobulbar and intracranial lesions 5.1, neuroretinitis 0.4, other and not specified 0.2) | | 13.0 |
| Vitreous | | 0.1 |
| Site not specified | | 5.2 |
| Total—All Causes | | 100.0 |
| Number in study | | 4,426 |

ract and retinitis pigmentosa. Together these developmental affections account for nearly half of the blindness in this age group. *Moreover, there seems to be little hope that the number of such cases occurring can be substantially reduced until medical research has provided the explanation of processes interfering with normal development of eyes and their causes.*

*Affections of the retina* account for 28 per cent of the blindness in the school age group as of 1954–55. Retrolental fibroplasia, now the largest single cause of blindness in children, was responsible for 19 per cent of the total and 29 per cent of the new pupils entering in that year. The other retinal affections are chiefly the degenerative types, such as retinitis pigmentosa and macular degeneration, which are usually hereditary or

of prenatal origin. A type of tumor known either as retinoblastoma or glioma is also prominent in the retinal group.

The *affection of the crystalline lens* most frequently seen is cataract, with 13 per cent. As mentioned above these cases are chiefly of prenatal origin. In several instances hereditary histories covering several generations are on record for these children. Other etiologies noted are infections, including rubella during pregnancy of mother, and injuries.

*Affections of the optic nerve* account for 13 per cent of the blindness. These too are often recorded as of prenatal origin, but some are related to specified causes, especially those affecting the nervous system, such as brain tumor, concussion injuries, syphilis, encephalitis and meningitis.

*Uveal tract affections* were responsible for 7 per cent of the total. The known etiologies of these cases were infectious diseases and injuries but far too many are of prenatal origin with cause not specified or simply etiology "unknown."

*Corneal affections* account for 3 per cent of the total. These are chiefly due to infections. Some are due to injury and several are of unknown cause.

### Eye Care

Our studies do not include summary or evaluation of the eye care provided for blind children. The average first record of an eye examination forwarded to us covers information on the diagnosis, age at onset of blindness, visual acuity and recommendations for eye care, as determined by the school ophthalmologist about the time the child enters a school or class for the blind. In subsequent years the school may forward a record of re-examination of the child, or a notation of a change in his vision. Not all schools are doing this. Many are never able to fill in the information missing in the first examination.

Generally speaking records now available in most school units are not entirely adequate for our study of causes. Their brevity suggests that intensive study of a case, either before or at the time of entering the school for the blind, is the exception rather than the rule. It seems evident also that even school superintendents who are aware of this need are unable because of budget and functional limitations to do much about it directly.

We are apparently missing opportunities to add to medical knowledge, as well as to increase eye care for these handicapped children because health and educational services, organized separately on a functional basis, are not also coordinated by some central agency having over-all responsibility.

### Coordination of Services

In order to accomplish its own educational objectives the school needs an awareness of the total needs of each child and how these may be met. Actually it is not necessary or desirable that the school provide non-educational services, but school authorities need to have knowledge of medical examinations made elsewhere. They should know the findings and recommendations, whether parents need help in understanding or carrying out recommendations, and where such assistance may be secured.

If able to provide social services the school might take on general supervisory responsibility for securing vari-

ous services required by the children during their school years. If on the other hand a visually handicapped child is routinely registered with an agency able and willing to serve him, the school can cooperate with such agency. It is important also that services be made adequate to meet the total need, so that underprivileged or segregated groups may not be neglected.

### Case Finding

Whether planning for centralization or merely for cooperation and coordination of services, it is essential to give more attention to case finding.

Examination of siblings of a child already identified as visually handicapped could give a good lead to other possible cases. But for more adequate case finding it would be advisable to include in the routine health supervision of every child at least one thorough eye examination in his early preschool years.

### Summary

Comparison of data in a study of causes of blindness among children of school age as of 1954–55 with those of similar reports, dating from 1933–34, shows several significant changes:

1. The blindness rate due to infectious diseases has been progressively decreasing. The estimated rate for 1954–55 is 75 per cent under that of 1933–34. The most important decreases occurred in ophthalmia neonatorum and syphilis.
2. The rate due to injuries decreased 38 per cent from 1933–34, or 47 per cent from its high point in 1937–38.
3. These decreases have been largely offset by an increase in the number of blind and rate of blindness because of retrolental fibroplasia—a maldevelopment of the retina in premature infants due to excessive use of oxygen in their early care. This disease accounted for one out of five of the blind pupils enrolled in school in 1954–55, but is expected to rise to one-half of the total by 1960.
4. Heredity remains an important cause of blindness in children.
5. The most consistent finding in these studies is the fact that the largest group of cases must be classified as of prenatal origin with *cause unknown*. Research that will determine the causes of maldevelopment of infant eyes is badly needed.
6. The number of case records with undetermined or undeterminable etiology, and the number with unspecified site has the effect of underestimating the importance of known causes.
7. There is evidence that both the services to individual children and the research leading to prevention might be improved by definite planning for early case finding, for more exhaustive examinations, and some centralization of information and responsibilities.

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## SERGEANT DESIGNS CORNEAL CLAMP

Sergeant First Class Charles W. Furness, by inventing a small gadget, has helped along the eye bank program. As a member of the ocular research unit at Walter Reed Army Medical Center he helped develop a process for dehydrating human corneas so that they can be preserved indefinitely. During this work he designed a clamp to hold the cornea during dehydration, reports *Medical Technicians Bulletin.*

# EYEGLASSES AS A THERAPEUTIC AGENT

**An edited report of one of a series of Cornell Conferences on Therapy by the members of the Departments of Pharmacology and Medicine of Cornell University Medical College and the New York Hospital, with collaboration of other departments and institutions.***

DR. GEORGE READER: The subject of the therapy conference today is "Eyeglasses as a Therapeutic Agent," and Dr. John McLean, Professor of Surgery, will open the discussion.

DR. JOHN MCLEAN: "If you don't wear your glasses you'll ruin your eyes." "If you wear the wrong glasses you will spoil your vision." "If you do wear glasses you become so dependent on them that your eyes will be weak and you won't be able to get on without them." These statements are all erroneous and are not made by ophthalmologists.

In certain situations eyeglasses do protect eyes. Eyes have been lost because people did not wear their glasses, but these are not glasses in the ordinary sense. I refer now to protective spectacles, goggles of one sort or another, which are used in industry to protect eyes from flying particles, radiant energy, and other hazards. However, since this is a therapeutic conference, I will not consider this preventive aspect further.

We also use a variety of glasses in treatment as protective devices in certain special therapeutic situations. For example, in paralysis of the fifth and seventh cranial nerves we use moist chamber spectacles and similar devices which fall under the general heading of eyeglasses for mechanical protection of the cornea. Such devices are used in certain of the corneal dystrophies such as keratitis sicca, in which there is deficiency of tear production, and in some cases of corneal ulceration. Occasionally we use so-called pinhole glasses to reduce movement of the eyeball in the orbit, particularly in detachment of the retina in the immediate postoperative period. Another situation in which special glasses are used involves the lid crutch, in which a mechanical attachment to a frame serves to support a lid which droops in ptosis.

Ordinarily, however, glasses are used for other purposes. First and foremost they are used to improve vision in patients who have refractive errors of the various types. Special reading glasses, bifocals, trifocals, and quadrifocals are prescribed to make up for the loss of accommodation which is part of the physiologic aging process, and of course eyeglasses are necessary to replace the action of the crystalline lens in the eye after cataract extraction.

There are special cases in which glasses of various sorts are used to improve vision. One example of this is the telescopic spectacles for patients with particularly poor vision due to organic disease. The usefulness of telescopic spectacles is very limited, but they have a definite place, and

* Reprinted from the *New York State Journal of Medicine*, October 1, 1957.

certain patients can be helped a great deal, particularly in near vision, with such spectacles.

Some surgeons who work on particularly fine tissue, such as the eye surgeon and in special cases the ear surgeon, the neurosurgeon, and the cardiac surgeon, use special glasses to magnify the image and render minute surgery more accurate.

Contact lenses are used in a number of situations. There are some cases, such as keratoconus and irregular astigmatism, in which the patient cannot be helped with any form of spectacle lens and it is physically impossible to cast a sharp image on the retina through the irregular cornea. By placing a contact lens in front of the cornea, however, the irregularities can be ironed out optically, a clear image obtained, and vision restored. Contact lenses are useful in unilateral aphakia, where a cataract has been removed from one eye and a normal lens remains in the other. Under such circumstances the ordinary spectacle lenses, although fitted so that each eye attains good visual acuity, result in so great a discrepancy in image size on the retinas of the two eyes that that fusion is usually impossible. On the other hand, if a contact lens is used on the aphakic eye the image size difference is not beyond the limits of fusion, and most of these patients obtain good, useful binocular vision.

Contact lenses are indicated where the patient's profession makes the wearing of spectacles undesirable, although his vision is so poor that he requires an optical device to carry on his work. An outstanding example is the actor. Another example is the professional athlete who cannot wear spectacle lenses even with guards but who cannot see well enough to perform without the improvement of vision available with contact lenses.

Of course a considerable share of the demand for contact lenses results from the vanity of people who have read comments about "girls who wear glasses." Since they are unwilling to wear ordinary glasses but do need some aid, they choose contact lenses. It is interesting to note that contact lenses are usually fairly well tolerated by people who need them because of their profession, for an economic reason, but are not nearly so well tolerated by those who wear them only for vanity's sake.

Glasses have been prescribed for all sorts of symptoms. It has been said that refractive errors can cause almost any type of symptom the patient can imagine. We realize now that relatively few headaches are of ocular origin and practically all symptoms, such as disturbances of the gastrointestinal tract, migraine, and other difficulties which were at one time attributed to refractive error, are due to other causes. Even now many people with such difficulties first go to get glasses. It seems to be customary in many hospitals to refer a patient with headache first to the eye clinic to "rule out a refractive error," and only after that to reconsider his headache and really look into its cause. Many of these symptoms are of a psychosomatic character, and often they are helped temporarily by eyeglasses as they are by other placebos.

In the field of extraocular muscle imbalance eyeglasses have an important role that is often forgotten. Patients who have various types of phorias may be quite uncomfortable. From time to time they experience

periods of double vision and rather severe headaches which can often be relieved by prescribing glasses or prisms to balance their visual angles better. A particularly outstanding example of this is the young child with accommodative esotropia in whom the crossed eyes may be straightened if the excess accommodation can be relaxed by the use of convex lenses. Another example, less commonly seen but nevertheless important, is the occasional double vision associated with severe exophthalmos in Graves' disease. These symptoms can often be relieved or reduced by judiciously applied prisms in spectacles.

Then we have the long, impressive word "aniseikonia," which refers to unequal retinal images in the two eyes. This is said to produce all sorts of symptoms. Aniseikonia is a condition which occurs in many otherwise normal people with normal eyes. A survey of many normal, well adjusted, healthy college students revealed its presence in a large proportion of them who were asymptomatic. But when aniseikonia is discovered in a patient with a host of symptoms, he may be given glasses designed to correct this difference in image size. Usually symptoms are relieved, at least for a time. In many instances the symptoms return after a period of time, and they may turn out to have had a different etiology.

The bulk of the adult population in this country wears glasses, many happily, some under protest, some through fear that something dreadful will happen to their eyes if they don't. In this room there seem to be only two ophthalmologists. It is interesting to note that neither of us is wearing glasses.

Perhaps I had better stop here and see if there is any discussion or if anybody has questions.

DR. JANET TRAVELL: I wonder if Dr. McLean would say something about tinted glasses. I see people wearing dark glasses in the evening driving cars.

DR. READER: You mean entirely aside from protection against excess exposure to the sun or because they believe or have been told they have weak eyes?

DR TRAVELL: Yes, I can't understand how they can see well, especially in the dark.

DR. MCLEAN: I think that in most instances the person simply went out and bought the glasses.

DR. TRAVELL: I understand they have their refractive lenses made up in tinted glass. Often they don't wish to buy an additional pair for protection against glare, so they just get the tinted ones and continue to wear them in the evening. I wonder if that might not have something to do with automobile accidents.

DR. READER: Some patients say their oculist prescribed glasses with a tint to relieve them of some discomfort.

DR. MCLEAN: Yes, there are many patients who seem to feel more comfortable with a slight tint in the lens. Most tints are not particularly noticeable and differ from the dark lenses referred to by Dr. Travell. To some extent the latter are a fad, and I am sure this does contribute to accidents on the highway after dark. In fact some articles and editorials on this subject and on the subject of tinted windshields, which fall into the same category, have recently appeared in the eye journals and in the J.A.M.A.

Where there is exposure to excessive glare and light on a tropical beach or on bright snow, there is certainly indication for cutting down the glare through the use of tinted glasses. There is no indication, however, for carrying the tint indoors or using it after dark.

DR. READER: Are there some people who have chronic photophobia?

DR. MCLEAN: Yes, there are people with organic disease of one kind or another who require some shielding from light, but they are relatively few.

DR. TRAVELL: Some migraine sufferers, for instance.

DR. MCLEAN: I might include certain albinos and patients with congenital or acquired aniridia who do not have the normal shutter mechanism of the pupil, which adjusts the light coming into the eye, but again these are very rare.

DR. READER: While we are on the subject, Dr. McLean, what kind of glasses would you recommend for exposure to bright sunlight, the seascape or snowscape that has a source of glare? Would you have a preference for the polaroid or some other special type of lens?

DR. MCLEAN: Some interesting studies have been made on lifeguards in Atlantic City by Dr. Harley. To the horror of the optical profession, these seem to indicate that some of the cheapest and simplest glasses sold in drugstores or "five-and-dime" stores served the purpose just about as well as some of the most expensive types. That report has been the subject of a great deal of disagreement, particularly from the optical industry, but I don't believe that the rebuttal has provided substantial proof.

DR. WALTER MODELL: Are the polaroid glasses of any special value?

DR. MCLEAN: Polaroid lenses do have a particular use when one is looking into glare from a surface which reflects and polarizes the reflected light. Under those conditions glare can be greatly reduced.

DR. MODELL: Is it a misconception that polaroids are useful in other types of glare?

DR. MCLEAN: We find polaroid particularly useful in certain malingering tests which we don't want to publicize too widely.

DR. TRAVELL: How is that?

DR. MCLEAN: We can usually arrange polaroid projection section screens on a visual acuity chart so the patient cannot tell which eye is actually doing the reading. If he is malingering, he is likely to read with the right eye what he says he sees only with the left.

VISITOR: What about the silvering of sunglasses?

DR. MCLEAN: I thought that fad had disappeared.

VISITOR: Maybe we are getting it back.

DR. MCLEAN: It is outmoded in this area. We used to see more of it than we do now. It was a fad, a conversation piece on the beach.

DR. MODELL: I recall having read two or three years ago of treatment for wryneck with glasses. Is that recollection correct?

DR. MCLEAN: To some extent. A fair proportion of cases of torticollis (wryneck) are of ocular origin. They are caused by a muscle imbalance, so that in order to obtain good binocular vision the child—and usually it is a child—must tilt his head to achieve fusion and line up his images. Often the child is seen by a pediatrician who observes that his head is kept

twisted to one side. The child is then referred to an orthopedist, and is lucky if he doesn't get the sternocleidomastoid muscle cut before finally reaching the ophthalmologist who may have to correct the superior oblique muscle defect.

DR. MODELL: Do glasses help?

DR. MCLEAN: The number who can be corrected with prisms and spectacles are few. Most require ocular surgery. I don't mean that all torticollis cases are of ocular origin.

DR. TRAVELL: There is also the person who has glasses of the wrong focal length for the work he is doing. If he has too short a focal length and has to bend his neck in order to see clearly, he too develops a stiff neck.

VISITOR: Can anything be done to halt rapidly progressing myopia which seems to develop rather suddenly in a child?

DR. MCLEAN: Actually it doesn't often develop suddenly. It is usually discovered suddenly but has been developing for some time. I do not know of any satisfactory treatment to arrest it. All sorts of things have been advocated, including various vitamins. Most recently there has been some advocacy of calcium and vitamin D without, to my mind, a great deal of sound evidence behind it. Years ago it was customary to take these children out of school for a year at a time, in the belief that rest would halt the myopia, but that didn't work. Even further back in the past there was a fad for atropinizing these children's eyes, both eyes for a year or two at a time. That was found to be ineffective and was given up. It is still customary in some communities to put such children into so-called "sight conservation" classes, in spite of the fact that there is no evidence that these classes conserve anything.

DR. READER: There is really no relationship between eyestrain and myopia, is there?

DR. MCLEAN: I would go further and say I don't believe there is any such thing as eyestrain.

DR. READER: Doesn't excessive use of the eyes in reading or close work contribute to the development of myopia?

DR. MCLEAN: I have never seen any sound evidence that use of the eyes alters the refractive state in any way.

DR. MODELL: I must confess I have a book at home entitled "Sight Without Glasses." I didn't buy it, it was given to me, but I did read it. Part of its thesis is that by doing certain exercises one can learn to do without glasses. The exercises include learning to read printed matter upside down, and a few other such devices. After the book got some publicity it was stated, I believe in the J.A.M.A., that people who appeared to have their vision helped by these exercises were in reality learning to recognize defective images. I wonder if anything has come of that sort of thing, the use of exercises to eliminate the need for wearing glasses.

DR. MCLEAN: That has been studied very carefully on a statistical basis with a large series of patients. I think perhaps the best report on the subject was published by Dr. Alan Woods. It appeared, I believe, in the Transactions of the American Academy of Ophthalmology some years ago. He showed quite conclusively that a group of patients who were put through this course by its advocates showed no change except that quite a

few of the patients learned to perceive letters and numbers better than they had previously when the image was blurred. They learned to recognize them better. They learned, for example, that a triangular-shaped letter when it can barely be seen is usually an A when the apex is up and usually a V when the apex is down. These are letters which they may not have been able to recognize before the course of training. However, when confronted with symbols in which letter recognition did not play a part, or when measured objectively, they had not improved. People certainly can be taught to use defective vision more efficiently.

DR. NATHALIE A. STRAHAN: What would you include in a routine examination of a child? How extensively should the eyes be examined?

DR. MCLEAN: By the ophthalmologist?

DR. STRAHAN: By the pediatrician.

DR. MCLEAN: I think that as soon as the child is old enough the pediatrician should get the best estimate he can of the child's visual acuity at a distance. He ought to examine the eyes externally and ophthalmoscopically.

DR. READER: At what age would it be reasonable to do that?

DR. MCLEAN: He ought to examine the eyes externally and ophthalmoscopically the very first time he examines the newborn baby.

DR. READER: What about visual acuity?

DR. MCLEAN: Visual acuity can usually be determined in cooperative children before the child is old enough to go to school by the use of simple colored picture charts.

DR. MILTON LEVINE: I think one thing to remember is that difficulty in vision may produce severe emotional disorders in children. If we don't keep that in mind we may miss it entirely. I remember a child of four at a nursery school who would not play with other children. He just stood in the middle of the room by himself and screamed. The teachers at first thought he was mentally retarded. We checked his eyes and found he had a very marked myopia. I think it was something like 20/200. When we gave him eyeglasses his attitude changed completely. He became one of the group and is now an honor student at Music and Art High School in New York, a school with extremely high scholastic requirements.

DR. READER: Is there any way this can be detected other than by relatively gross manifestations? Is there some way to pick up myopia before a child gets into social difficulty?

DR. LEVINE: I think if you watch children when they are little and are looking at pictures in books you can get a fairly good idea about the likelihood of visual disturbances.

DR. MCLEAN: You can get an estimate of vision in a very small child as a rule by playing games with him. You can test visual acuity in ordinary matters by charts which have symbols, letters which point different ways, or pictures. One can tear up some paper and put pieces of different sizes on the floor to learn the distance at which he can spot them and go to pick them up. Children who are out of visual contact with their surroundings are liable to be somewhat warped in their adjustment, and when their vision is brought back by the use of glasses they may very well be restored to much more

normal behavior. Dr. Samuel Levine is very proud of the fact that every child admitted to the Department of Pediatrics has his eyegrounds examined as part of the routine physical examination, and he feels that this should be a part of the routine examination in all children.

DR. LEVINE: We have darkened rooms and special clinics for this purpose, but I don't believe eye examinations are done routinely in pediatricians' offices outside the hospital.

DR. READER: I'd like to ask Dr. McLean, what is the natural history of myopia? Is it something the child is born with? Is it progressive? Can it be arrested?

DR. MCLEAN: The average normal child is born with a fair amount of hyperopia, short eyeball, which grows as the child grows. Even the child who has a hereditary background of myopia is usually born with little or no myopia, but the globes enlarge unduly as he grows, and he develops an axial myopia because his eyes are too long. This apparently is simply an overgrowth in the posterior direction of the globe, so that he may wind up with a considerable amount of myopia. This becomes manifest around the age of four, five, or six and usually continues to progress throughout the growing period. It is more or less arrested when full bodily growth stops, subject to some variation. Since most of the progression of the myopic phase occurs at the time education is under way, the use of the eyes in studying has been blamed.

DR. MODELL: I would like to ask about the relationship of illumination to the need for lens correction. I have found that there comes a time when I need more light to be able to read well. That is about the time I do well to have my lenses changed. Is there any actual connection between these events?

DR. MCLEAN: There is a connection, and the best studies on that were made some twenty-five years ago by Ferree and Rand, who studied the relationship between presbyopia, presbyopic correction, and illumination requirement for optimal reading facility. There seems to be no question that as the individual ages and becomes more presbyopic he requires more illumination for efficient reading. If his correction by glasses for presbyopia is inadequate, his requirements for lighting increase proportionately.

DR. MODELL: If he took care of the lighting problem, would that in any way stay the progress of presbyopia?

DR. MCLEAN: In no way.

DR. TRAVELL: I wonder whether Dr. McLean would tell us something more about contact lenses, the varieties, costs, care, and so on?

DR. MCLEAN: Practically all modern contact lenses are made of one or another kind of plastic. They can be divided roughly into a few groups. First there are the lenses which have both a corneal and a scleral element, in which the scleral rim fits against the conjunctiva over the sclera and the corneal portion clears the cornea. Those lenses require fluid in the space between lens and cornea and are best made to a mold, an actual impression made of the eye. There are lenses which are made more or less by trial and error, not from a mold. I believe this type is not quite as satisfactory as the other.

Under various trade names there are a number of types of what are

called "ventilating" lenses. These also have a scleral lip and a corneal element which clears the cornea, but by a very small capillary space. No fluid is placed in these lenses, but there is a channel or hole in the scleral segment which communicates with the corneal segment, so the lenses are put on moist and the patient's tears fill the space between lens and cornea. These too as a rule are made to a mold.

There is the purely corneal lens which is a small meniscus fitting directly over the cornea, having no scleral lip, and held in place by the lids and capillary attraction. They are fitted either by measurement computation of cornea or by trial and error which arrives at the same answer.

DR. READER: Do they have to be inserted with a local anesthetic?

DR. MCLEAN: All contact lenses worn by patients should be inserted and worn without surface anesthesia. Occasionally anesthesia may be needed for the first few fittings, and always for molding, but not in daily use.

DR: MODELL: Would you make a categorical statement that all visual defects which could be corrected by lenses of one type or another should be corrected that way?

DR. MCLEAN: No, I would not.

DR. MODELL: How would you modify it?

DR. MCLEAN: Glasses are a means of making an individual see better. Some people don't want to see better and don't need to see better. Under those circumstances I would not force glasses on them. Sometimes glasses are a means of relieving various kinds of symptoms, and if the symptoms are severe enough and the individual wants to wear glasses, I think he should be allowed to do so. Again, I don't think they should be forced on him if he is reasonably comfortable and happy without them. As I said at the outset, I don't believe there is any sound evidence that any organic harm will come to the eyes either from wearing or not wearing glasses because of refractive errors.

DR. READER: Do you think the muscles of accommodation tire if used for reading or other close work where there is a refractive error or astigmatism?

DR. MCLEAN: If because of a refractive error the muscles are overworked, they may tire more readily than would the normal muscle which needs to do less work for the same amount of reading.

DR. READER: Is there any permanent damage?

DR. MCLEAN: There is no damage.

DR. READER: It is just a matter of getting tired?

DR MCLEAN: If you walk too far and are out of practice, you will get tired, but if you rest you will recover. The same considerations apply to the eye muscles.

DR. TRAVELL: How costly are contact lenses?

DR. MCLEAN: That is a subject on which I don't believe I am competent to speak. Some can be quite inexpensive, others very expensive.

DR. LEVINE: In working with adolescent children we try to make them as attractive as we can to lessen their emotional problems. In view of what you have said about vanity and the use of contact lenses, would you advise the use of contact lenses on adolescent girls?

DR. MCLEAN: Sometimes we do. I cannot make a didactic statement on that. It has to be individualized.

Sometimes it is most important for an individual's well-being to be able to see without wearing the ordinary glasses. Contact lenses may be the solution.

DR. LEVINE: How long can they be kept on without being removed?

DR. MCLEAN: The average adolescent girl who is wearing them because of vanity is likely not to be able to wear them more than four to six hours at a time. Some can do better, some not as well, and some are so emotionally unstable that they can't tolerate them at all. Patients who need them to see, patients with keratoconus, and some of our patients with unilateral aphakia usually wear them all day long. I have had a number of patients who sometimes forget to take them out at night and wear them twenty-four and thirty-six hours at a stretch because they just forget they have them on.

DR. TRAVELL: Can contact lenses be substituted for ordinary bifocals?

DR. MCLEAN: There is no way to build a bifocal into them. One can wear a contact lens for distance and reading glasses to see close objects, or bifocals with a plain segment above and a reading segment below.

DR. EDWARDS: I was wondering about one aspect of glasses for people who do a lot of reading. I have noticed in others as well as in myself that after much close reading it is necessary to stop and look off into distance. It takes a long time before relaxation of the ciliary accommodative muscles occurs. In such cases do you advise either removing glasses while reading or having a different set for that purpose?

DR. MCLEAN: This again is a question that cannot be answered in an arbitrary fashion. It has to be handled individually. There is a perfect parallel to what you describe. If you take a long walk and your legs get tired and then you sit down by the side of the road for a while, I think you will find the situation much akin to what you describe for the eye muscles.

DR. EDWARDS: Does it usually take thirty to forty minutes for relaxation of the eye muscles to occur?

DR. MCLEAN: That is considerably more than average.

DR. TRAVELL: After resting from the long walk, you're awfully stiff when you get up, aren't you?

DR. MCLEAN: I think that is comparable to what Dr. Edwards described in the ciliary muscle.

DR. LEVINE: How do you explain the so-called television eyes in children who sit close to the television set? I have heard them complain of headache and assumed that television was the cause. Is that correct?

DR. MCLEAN: I don't know whether it is or not. I often think of a young girl who was having difficulty in her high school work. She developed terrific headaches when studying. On close question it turned out that these headaches occurred only when she studied Latin, and no other subject. I suspect there is a large psychosomatic element in the situation you describe.

### Summary

DR. SOLOMON GARB: Some commonly held notions about eyeglasses have been described as erroneous. Ordinary glasses correct refractive errors in vision but do not influence the progression or retardation of the error. They do not protect sight and

may be dispensed with, without the risk of affecting the basic condition, by persons who prefer not to use them. The view was expressed that there is no such thing as eyestrain. Excessive use of the eyes may produce tiredness of the eye muscles, but adequate rest restores them as it does any other overtired muscle. The role of contact lenses was considered. In some situations they are essential, in others they are preferable to spectacle lenses, but as a rule they have no advantage over spectacles. Some patients demand them for reasons of vanity. They are best tolerated by people who need them for reasons other than the wish to present a pleasing appearance. Since relatively few headaches are of ocular origin, patients should not necessarily be referred to the ophthalmologist first. Eyeglasses are of value in certain cases of extraocular muscle imbalance and aniseikonia. Since a fair proportion of cases of torticollis result from extraocular muscle imbalance, especially in children, this can often be corrected by proper eyeglasses or by surgery on the extraocular muscles. Eye exercises do not actually improve vision; they train the patient to recognize defective or blurred images. With increasing presbyopia more illumination is needed for efficient reading, but the degree of illumination does not alter the progress of the condition. Glasses should not be forced on a patient who does not wish to wear them and who can manage without them.

## Cataract Cure Refuted

FOR several years a California sales company has been promoting the use of calsulfhydryl (hydrosulphosol) for the treatment of cataracts, corneal scars, burns of the eye and skin, retrolental fibroplasia, diabetic retinopathy, corneal dystrophy, dendritic ulcers, chorioretinitis, ulcerative colitis and anal strictures.

On November 22, 1956, the *Los Angeles Times* carried an extensive article by William S. Barton, science editor, reporting the successful treatment of more than 100 cataract patients with calsulfhydryl. In January 1957 on the Art Linkletter television program a cataract patient appeared who also stated that his eyesight had been greatly improved as a result of calsulfhydryl treatment.

Although previous investigation by the National Research Council and by the Council on Chemistry and Pharmacy of the American Medical Association had failed to substantiate any of the claims as to the therapeutic value of calsulfhydryl in any of the conditions for which it had been recommended, the number of inquiries coming as a result of the recent publicity made it advisable to look into the problem again. Accordingly the National Society wrote to 80 ophthalmologists in Los Angeles and Beverly Hills, California who were listed as certified by the American Board of Ophthalmology, inquiring whether they knew of any cataract patients who had been treated with calsulfhydryl.

Twenty-seven replies were received. Sixteen ophthalmologists said that they had not seen any patients who had used calsulfhydryl for treating

cataracts. Other ophthalmologists wrote about patients who cancelled scheduled cataract surgery in order to buy the drug and treat themselves. One ophthalmologist said that he had had one patient of 76 years who insisted on taking sulfhydryl in 1954 for six months. He said that her cataracts, which appeared of average density, progressed very slowly and that she maintained her vision of 20/30 in both eyes for two years. However, in view of the known wide differences in rate of development of cataracts, this ophthalmologist was reluctant to attribute the slowness in progression of her cataracts to the use of sulfhydryl and said that it might even have been in spite of the medication.

Ten other ophthalmologists reported that they had seen patients who received calsulfhydryl for a variety of eye conditions such as scars, burns, retrolental fibroplasia and cataracts, and had never seen any benefit from the treatment. One ophthalmologist had had several cataract patients on the drug for six to nine months without seeing signs of improvement. Another stated that two patients had used calsulfhydryl, orally and topically, religiously for two years and the cataracts progressed to maturity. He has seen patients under the care of a doctor in the Southwest who claimed they had better sight after the treatment, and whom that doctor had reported as improved, but in whom he could see no objective improvement.

Another ophthalmologist who has examined a good many of the blind workers in a workshop who have been taking the drug for 10 years has failed to see improvement in any of them.

In summary, the opinions reported by the ophthalmologists who replied to the inquiry and who were certified as competent by the American Board of Ophthalmology were entirely negative.

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## NEW NSPB FILM

### on Education of Partially Seeing

Now ready for distribution is the National Society's new film, "A Fair Chance for Tommy," produced with the help of a grant from the American Legion Child Welfare Foundation. The film deals with the education of partially seeing children, and is designed to help parents and teachers understand some of the basic techniques and materials employed.

Tommy is a bright, healthy youngster, eager to learn, and in general like the other boys in his fourth grade class. But he has a vision defect. The film shows how during a typical school day Tommy successfully meets the problems imposed on him by this handicap. Under the program arranged for him he spends as much time as possible in regular classes with pupils who have normal vision. For activities requiring concentrated eye work he uses the facilities of a specially equipped classroom supervised by a teacher who has been trained to work with partially seeing children. The close cooperation between the regular and special teachers is clearly demonstrated.

The film is 16 mm. sound, black and white; running time 13 minutes. Fully cleared for TV use. Purchase price (in fibre case) $65.00, plus shipping charges. Rental $2.00 per showing. Free preview print on request. Address inquiries to the National Society for the Prevention of Blindness, 1790 Broadway, New York 19.

# The Schoenberg Memorial Lecture

THE tenth annual Mark J. Schoenberg Memorial Lecture was given on December 2, 1957 at the New York Academy of Medicine by Dr. Bernard Becker, chief of the department of ophthalmology, Washington University School of Medicine, St. Louis. Appropriately his subject was tonography, originated by Dr. Schoenberg nearly half a century ago. Since the great ophthalmologist's death in 1945 the New York Society for Clinical Ophthalmology and the National Society for the Prevention of Blindness have held an annual joint meeting to honor his memory. Dr. Schoenberg founded the New York Society for Clinical Ophthalmology, and for years led NSPB's glaucoma control program.

Tonography has proved most useful in the diagnosis and evaluation of therapy of the glaucomas, Dr. Becker said. In its use two sources of error must be avoided. The first, alterations in episcleral venous pressure during the procedure, can easily be corrected by the current tonography tables. The second, deviations of the individual eye from the assumed average values for scleral rigidity, involves more difficulty. The rigidity coefficient may be estimated most reliably by applanation readings of intraocular pressure preceding the tonogram. If the coefficient differs significantly from the average, it is important to make a correction by the graphic or algebraic methods described. Otherwise a high rigidity will simulate glaucoma by tonometry or hypersecretion by tonography, and a low rigidity may cause failure to recognize glaucoma.

In discussing outflow facility Dr. Becker quoted advice given by Dr. Schoenberg in 1912: " . . . mere measurement of intraocular pressure . . . is a procedure which may be incomplete and misleading unless the index of ocular drainage is measured at the same time."

For the early detection of chronic simple glaucoma, the speaker continued, tonography following a water drinking provocative test has proved valuable. Similarly, a mydriasis provocative test combined with tonography facilitates the diagnosis of angle-closure glaucoma. A prolonged study of the relatives of glaucoma patients helps evaluate detection methods, since one can observe the early appearance of an outflow disorder and follow it to the point of clinically recognized glaucoma.

Tonography affords an early and valuable insight into the effects of medical and surgical therapies. A recent study of 209 surgical procedures on eyes with angle-closure glaucoma demonstrates the importance of tonography in evaluating outflow facility before surgery. In miotic therapy of chronic simple glaucoma tonography has proved the best safeguard for continued pressure control and preservation of field. An exciting new finding offers help in the medical control of chronic simple glaucoma. Diamox induces about a 50 per cent decrease in the rate of aqueous flow, and topical epinephrine also reduces the flow by 30 to 35 per cent. It has been discovered that these agents are additive; when used together reduce average secretion by 66 per cent.

# WORKING TOGETHER in the COMMUNITY

**An experienced director of welfare services emphasizes the benefits of long-range planning in which all agencies share.**

PARTNERSHIP as one of the basic concepts of community work was strongly emphasized by Mrs. Marcella C. Goldberg at a meeting of the Pennsylvania Association for the Blind held in Hazleton last October 25. Mrs. Goldberg is well known as the director of the excellent program of welfare services administered by the Association's Pittsburgh Branch.

"For the ultimate improvement or elimination of existing social, physical and emotional ills," she said, "it is necessary for all community agencies, including those working with the blind and the partially seeing, to cooperate in long-range planning and its implementation. It is always better to participate in a project at an early planning stage than to try to get on the bandwagon after it is under way.

"For example, suppose a community is organizing to request out-patient care at a local hospital. If plans are developed for general medical clinics as a beginning, how much better to be in on that original planning, pointing the need and value of an eye clinic, than to wait until the general service is established and then ask for consideration for eye care.

"Similarly, if a local committee for the handicapped plans an employment or sheltered shop program, how much better for an agency for the blind to be included at the beginning stages than to find itself later in competition, or totally ignored."

Mrs. Goldberg discussed not only the "why" of working with community organizations, but the "how." She used as an illustration the way in which the Association's Pittsburgh Branch, as a private social agency, might help a school establish a special program for a partially seeing child.

### Case of Johnny

"Let us assume," she said, "that Johnny, age eight, is referred to us by his ophthalmologist. We are told that the boy has congenital cataracts which have been operated on; that his vision with glasses is 20/200 for distance, 14/168 or Jaeger 12 for near. He is scheduled to enter third grade at X School, and the doctor would like us to arrange for the special help he will need.

"We have had no previous contact with X School so we call the county school office and discuss the referral with the supervisor of special education, who assures us that large-type materials can be supplied to the school on the principal's request, and that he will be glad to give whatever help he can. Our next contact is with the supervising principal of the district in which X School is located. We explain the problem briefly and ask if he can arrange for a meeting with the principal of X School, the school doctor, nurse, perhaps the third grade teacher, and anyone else he wants to include. He may want to arrange and

attend such a meeting himself, or he may give permission for the program and suggest that we arrange the meeting with the principal, inviting those persons to attend whom the principal suggests.

"In such a meeting our role lies in interpreting Johnny's visual limitations *and* abilities; in this particular diagnosis, the desirability of his using his eyes as much as he can; and the special tools and appliances that will enable him to participate in the school program. We do not advise regarding curriculum planning or changes in teaching methods. We may suggest that if the school's practice includes giving periodic achievement tests these are available in large type. We may suggest that Johnny will not do well on a standard Binet test, and if the school routinely requires this, it may be wise to ask the psychologist to test him individually on a Binet revised for the visually handicapped. These suggestions are in line with special tools and appliances. We leave the door open for further help and interpretation if it is needed. We may even be in a position to offer supplementary large-type material not available from the county office.

"We would assume that, prior to the school contact, we had been in touch with Johnny and his parents, had explained the program to them, perhaps shown them a sample of the large type, and further explained any recommendations the doctor may have made to them that are not clear."

Members of the agency staff then arrange to see Johnny and his parents periodically, Mrs. Goldberg explained —perhaps once a month at first, then less often as indicated. They get to know the boy, his reactions to his defective vision, to being "special" in school, to his play restrictions. In this way they are able to help when help seems indicated. They may visit the school on a regular basis, or only when needed. They check at least at the beginning of each new year to make certain that materials are available, and to orient each new teacher if this is the principal's wish.

### Increased Resources

While this type of program is going on the school nurse may come to regard the Pittsburgh Branch as a resource she had not previously counted on. She has many children with defective vision whose parents cannot afford to pay for eye care. Will the agency provide this care? Here its responsibility lies in helping the nurse use the school medical program—probably even bringing the medical section supervisor of the department of public assistance to interpret its mechanics and uses. The nurse may ask about resources for helping children with other handicaps. The agency's knowledge can thus be utilized and it performs an additional function in the community.

The branches of the Pennsylvania Association for the Blind have good working relationships with local departments of public assistance, school and visiting nurses, doctors, state employment service; as well as family, children's and group work agencies. Blind people are referred to the branches for a variety of services, as are persons in need of eye care. The branches in turn refer blind people for pension application, or perhaps for other types of financial assistance. These referrals are obvious, and make

for a good and proper exchange of services. Mrs. Goldberg recommends carrying this further; for example, by keeping the visitor from the department of public assistance informed of developments on his referral; seeking his help and cooperation in interpretation and implementation of service; making him fully aware of what the branch can do, so that he can see possibilities for help with other clients. "So often," she said, "we feel that when we discuss program our listeners absorb all the vital facts. More often one good demonstration does far more than a dozen discussions of what we can do—if we but remember to report back and keep others informed."

## EYE-BANK REPORTS PROGRESS

Eight regional eye banks or collection centers are now affiliated with the Eye-Bank for Sight Restoration, Inc., of New York City, and maintain a coordinated program.

Since its founding in 1944 the Eye-Bank has received over 5,000 donor eyes for use in corneal grafts and in research. Many more are needed, and during last year a vigorous campaign brought in pledges from nearly 30,000 individuals wishing to give their eyes at death to restore sight to others. When the network of coordinated banks is complete it will be possible for many more people to become donors. In the limited space of 48 hours between enucleation and the use of the corneal tissue in the operating room the eye must be sent to the eye bank, inspected in the laboratory to make sure it is free from defects or communicable disease, and delivered to the surgeon. Rapid distribution has been accomplished by the cooperation of 250 affiliated hospitals, the airlines and the Red Cross Motor Corps.

In his report for 1957 Dr. E. Townley Paton, medical director of the Eye-Bank, stresses the importance of its research program. The donor eyes, after the removal of the corneal tissue, are sent to the laboratory, where they are essential to many lines of research. A great recent accomplishment has been the discovery that donor vitreous is effective in treating retinal detachment. Other advances have been made in the understanding of glaucoma, cataract, the degenerative diseases of the eye, and certain types of eye cancer in children.

The Eye-Bank sponsors a weekly corneal clinic where ophthalmologists can send their patients for free consultation. Some of them remain for surgery in the Manhattan Eye, Ear & Throat Hospital, where the Eye-Bank is housed. In charity cases the only expense to the patient is board in the hospital ward. The Eye-Bank makes no charge for corneal tissue or vitreous distributed to surgeons.

## NEW NSPB DIRECTORS

Three new members have joined the Board of Directors of the National Society. Elected at the annual membership meeting on December 13, 1957, to serve for the ensuing three-year period, they are:

Stewart P. Coleman, vice president and director, Standard Oil Company of New Jersey.

John D. Porterfield, M.D., deputy surgeon general, U. S. Public Health Service.

Algernon B. Reese, M.D., clinical professor of ophthalmology, Columbia University.

# EVALUATION OF ENLARGED TEST FORM

## used with the partially seeing

JEROME S. LIVINGSTON, Ph.D.
School Psychologist, Bureau of Child Guidance
New York City Board of Education

**Results of a study to determine whether photographic enlargement of the revised Stanford-Binet Intelligence Scale improves children's score.***

THE purpose of this study was to discover clues to the intelligence strengths and weaknesses of partially seeing children and whether enlarging the revised Stanford-Binet Intelligence Test would increase their score. A group of 60 of these children, age eight and nine years, was selected from 19 schools in a large city school system. Their visual acuities ranged from 20/70 to 20/200. Thirteen had better than 20/70 in the better eye. Previous records indicated that their mean IQ was 98.6, as compared with a group of normally seeing children who had a mean IQ of 103.3.

The collection of the data began by giving all 60 the standard form of the revised Stanford-Binet Intelligence Scale, Form L. They were then divided into two groups of 30 each, one control and one experimental, and equivalents were teamed. Three months later the experimental group was given the photographically enlarged test form and the control group was given the standard form in order to test the hypothesis that photographic enlargement of the visually presented tests of the scale would result in IQ rises. To test a hypothesis that partially seeing children perform less adequately in areas of mental functioning, a classification scheme involving 11 categories of mental functioning was developed. Forty-two tests of the Stanford-Binet Scale, Form L, were listed under 11 categories. The 60 visually handicapped children were compared with 407 normally seeing children in terms of performance on categories of mental functioning and on the individual tests comprising these categories.

### Results of Tests

The results indicated that photographic enlargement of visually presented tests of the Stanford-Binet Scale, Form L, did not make for significant gains in IQ for the partially seeing child.

All tests showed that in 11 categories of mental functioning only the visual-motor coordination revealed a significant difference between the normally seeing and the partially seeing (.01 in favor of the former). The hypothesis that the partially seeing would be deficient as compared with the normally seeing was not supported.

* Based on a thesis submitted at New York University, for which degree of Ph.D. was obtained in 1957.

In language development the partially seeing did better (.01) than the normally seeing on two abstract word tests. It was felt this was due to better concentration, small size of the class, and being accustomed to listening to oral reading. This result seemed to point up the advantages from special services in the schools: small classes, individual attention, teacher who understands the problem.

The findings suggest that factors other than adequate vision contribute to the better performance of the normally seeing group; that in the case of the partially seeing visual-motor skills, kindergarten experience, reading tools and personality rather than primarily the visual impairment caused poor performance on the 20 tests. For example, six of the 20 test forms contained pictures with fine line details, but these seemed to make little difference in the results in the two groups, possibly because the pictures were interesting in themselves. Reading tests favored the normally seeing. The partially seeing seemed to have less interest in reading regardless of print size.

### Conclusions of Examiner

The examiner's specific conclusions were:

1. Photographic enlargement of the test did not result in significantly higher scores.

2. Although partially seeing children performed inadequately on several standard visually presented tests of the Stanford-Binet, doubling the visual framework did not better their performance.

3. There was little evidence that the partially seeing child performs less adequately than the normally seeing in broad areas of mental functioning. Reasoning, language development, abstract generalization showed little difference in performance.

4. Partially seeing children were adequate in language and sometimes surpassed the normally seeing because of better auditory concentration.

5. Partially seeing children had some weakness in conceiving and executing a planning operation, apparently due to repressed personality and anxiety.

6. Partially seeing children failed test of social judgment involving interaction between individuals or implied threat of punishment by figures in authority; partially seeing child is less emotionally secure than the normally seeing; in social judgment requiring set conventional response the partially seeing child was superior to the normally seeing, perhaps as a result of general over-conformity.

7. Partially seeing children had difficulty with fine visual-motor coordination, directional orientation and manipulation of educational "readiness" material; test differences were not basic to intelligence limitations but to repressed nature of personality, school and home experiences.

8. Partially seeing children had better auditory memory than the normally seeing, except in digit recall which was anxiety causing.

### Guidance Need of Partially Seeing

The examiner felt that the test content may inhibit or traumatize pupil reactions, indicating a need for more guidance service with the partially seeing; that since they did well in reasoning and generalization they equal the normally seeing in thinking

capacity; that younger partially seeing children need more opportunity to discover and perfect visual-manipulative skills in kindergarten; that these needs should be passed on to the regular kindergarten teacher as well as to the special teacher; that since the tests showed reading retardation in approximately one-third of the partially seeing it is advisable to make available to them early in the reading program interestingly illustrated and properly printed books. This practice would benefit them in the upper grades.

The examiner feels that the experimental design should be repeated with younger partially seeing children; that a large number of partially seeing children with the same visual defect should be tested; that the same experimental design should be employed for the Wechsler Intelligence Scale for Children. He feels that comparison should be made between partially seeing in special services with those given no special aid. Further, he believes that a series of suggestions for guiding the partially seeing should be developed; that measurement should be made of achievement and motivation as a result of different lengths of stay in sight conservation classes; that contrast should be made in figure drawings of the partially seeing and the normally seeing in studying personality development, and that the performance of both groups should be contrasted on the Bender Visual-Motor Gestalt Test.

In discussing the implications for educational practice as a result of this study the examiner feels that the adequate performance of the partially seeing in language areas suggests the high quality of instruction in the special classes for the partially seeing and the value of individual teaching, strengthening the reason to continue spending tax dollars for such services.

## SUMMER COURSES

According to information received to date by the National Society for the Prevention of Blindness five colleges and universities will be offering summer courses for the preparation of teachers and supervisors of partially seeing children in 1958.

### Basic Courses

Illinois State Normal University. June 16 through August 8, 1958. Dr. Rose E. Parker, director, Division of Special Education. Illinois State Normal University, Normal.

George Peabody College for Teachers. June 9 through August 8, 1958. Dr. Lloyd M. Dunn, coordinator, Education for Exceptional Children, George Peabody College for Teachers, Nashville 5, Tennessee.

San Francisco State College. June 23 through August 1, 1958. Dr. Leo F. Cain, dean of summer sessions, San Francisco State College, 1600 Holloway Avenue, San Francisco 27, California.

Syracuse University. June 30 through August 8, 1958. Dr. William M. Cruickshank, director, Education of Exceptional Children, School of Education, Syracuse University, Syracuse 10, N. Y.

Wayne State University. June 23 through August 2, 1958. Dr. John J. Lee, chairman, Department of Special Education and Vocational Rehabilitation, College of Education, Wayne State University, Detroit 2, Michigan.

### Advanced Course

Syracuse University. July 21 through August 1, 1958. Dr. William M. Cruickshank, director, Education of Exceptional Children, School of Education, Syracuse University, Syracuse 10, N. Y.

# NOTES AND COMMENT

## • Doctors as Leaders

Advances in the country's health demand more leadership from the medical profession in meeting the acute social and economic issues which are closely related to medicine, according to Marion B. Folsom, Secretary of Health, Education, and Welfare. Speaking before the Association of American Medical Colleges in Atlantic City on October 21, 1957, the Secretary stressed the need for greatly increased armies of doctors and research scientists and for new medical schools in order to keep up with a rapidly growing population and the rising standards of public health.

Health problems, he said, "cannot be solved by the clinical practice of medicine alone; they require the cooperation of the medical profession with sociologists, economists, elected officials and public administrators, and many others." Some of these problems relate to preventable chronic diseases, others to rehabilitation of the handicapped, and still others to the growing number of older persons in our society. "These are basically health problems," he said, "and the public wants and needs the leadership and guidance of its doctors in meeting them."

## • Rochester Glaucoma Tests

Two pilot projects for the detection of glaucoma were held in Rochester, New York during 1957 by the Eye Conservation Committee of the Health Association of Rochester and Monroe County. In the first, held May 15 and 16, eight ophthalmologists examined 332 persons and found 11 glaucoma suspects. Five of them, or 1.5 per cent of those screened, were verified as cases of glaucoma. For the second project, held September 25 and 26, sixteen ophthalmologists volunteered their services. A total of 230 persons was examined, of whom 10 were glaucoma suspects, and 10 others questionable. Three of the first group and two of the second later had positive diagnoses, making a percentage of 2.2 of those screened.

## • Boy Scouts Win Praise

Since its founding in 1910 the Boy Scouts of America has lived up to its policy of being open to all boys, including those with handicaps. The veteran of its many troops of blind boys was organized in 1911 at the Kentucky School for the Blind in Louisville, and other units have flourished almost as long. Partially seeing or blind boys often join regular troops, keeping up with all activities. In Muskogee, Oklahoma a troop organized on the "Fifty-Fifty Plan" of blind and sighted boys has built scores of birdhouses for the city parks.

For years the *Handbook for Boys* has been available in Braille, and recently three manuals for Cub Scouts have been added. Even youngsters blind from birth manage to pass their lifesaving tests, cook camp meals, and win Eagle badges. One California lad has become such an expert on birds that he can identify from their birdcalls the fourteen varieties of woodpeckers found on the Pacific coast.

In its new booklet, "Scouting with Handicapped Boys" there is quoted a letter from Mason Bigelow, president

of the National Society for the Prevention of Blindness, which praises the Scouts' program. "The National Society for many years has worked particularly with children who have partial sight," Mr. Bigelow writes, "and a fundamental principle that has guided our work is similar to that which Scouting emphasizes—to encourage those boys to develop their capabilities and not to accentuate their handicaps."

### • Washington Eye Bank

The Eye Bank and Research Foundation, sponsored and financed by 57 Lions Clubs in the District of Columbia and nearby Maryland, has recently been organized with a dual program of research and sight restoration. Its board of directors is assisted by an advisory committee of six ophthalmologists.

The eye bank is maintained at Episcopal Eye & Ear Hospital, and corneal transplants are performed at Episcopal, Georgetown, Walter Reed and D.C. General hospitals. At Georgetown Hospital there is a deposit of corneal tissues preserved in glycerine by a new technique. The Foundation has set up a contingency fund to help needy blind persons whose sight can be restored by surgery.

As soon as an adequate supply of corneas is available, basic laboratory and clinical research will be started. The Foundation is now financing a full-time fellow at Georgetown Hospital, who is studying the techniques of

## Brother Sebastian

Courtesy of LOOK and the artist

corneal transplant and preservation of corneal tissue.

Dr. John H. King, Jr., chief of ophthalmology at Walter Reed Army hospital, described the Foundation's program at the last annual meeting of the Prevention of Blindness Society of Metropolitan Washington on December 5.

### • POB in Alabama

A dozen years of steadily widening work for the prevention of blindness has been accomplished by the Alabama Sight Conservation Association. It was organized by the Lions Clubs of the state in 1944 to serve medically indigent persons needing eye care. There are 158 clubs supporting the work, the only statewide program endorsed as such by the Lions International.

Medical treatment and surgery are available in six major cities, with a seventh in prospect. The ophthalmologists cooperating with the program give their services gratis. In 1956, 1,116 persons applied for help and 410 were hospitalized. Complete eye care, including glasses and medicines, is given all citizens of the state who are certified as needy by a Lions Club and the state pensions and security agency.

Special classes for partially seeing children have been established in the public schools, and experimental vision screening projects have been conducted among the school children in rural areas. Along with these projects is statewide education in eye safety.

### • Specialists Fenced Off

A warning against the isolation of the eye specialist was expressed by Dr. John E. Harris during his remarks on accepting the Friedenwald Memorial Plaque in June, 1957. Dr. Harris is associate professor of ophthalmology at the University of Oregon Medical School and director of the John E. Weeks Memorial Laboratory. While he has devoted himself to basic research in the biochemistry of the eye, Dr. Harris has also shown great interest in correlating ophthalmology with the other science disciplines.

"The breakdown of communication between the various specialties," he said, "is not an overplayed theme. One of the worst offenders is the ophthalmologist who with his rather peculiar jargon has succeeded unwittingly in isolating himself from his medical confreres. The same criticism applies to many of us who work in laboratories devoted to research on problems of the eye. We borrow the tools we need from other disciplines but often fail to return the favor when we do not apply the lessons learned from the eye to the solution of community problems."

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## PROPHYLAXIS FOR OPHTHALMIA NEONATORUM

At its meeting in Chicago on October 12, 1957, the National Society's Committee on Ophthalmia Neonatorum reviewed studies that had been made during the previous two-year period. The committee concluded that there still was not sufficient evidence to show the superiority of any antibiotic over one per cent silver nitrate as a prophylactic agent against babies' sore eyes. It felt, however, that the National Society should take leadership in trying to arrange for a research project in some area where there is likely to be a high incidence of gonorrhea, so that the comparative effectiveness of antibiotics might be determined over a long enough period of time.

## LETTER FROM CENTRAL HUDSON

More than 14,000 members have been enrolled in the Wise Owl Club of America, the organization sponsored by the National Society in the interest of eye safety in industry. Employees qualify as members when eye protection has saved their sight in work accidents. About one-fourth of the members have saved both eyes in single accidents. Many are repeaters—having several times escaped blindness because they wore safety lenses. The total number of eyes saved to date by the 14,257 members is 17,715.

One of the earliest sponsors of a Wise Owl chapter was Central Hudson Gas & Electric Corporation of Poughkeepsie, N. Y. A recent letter from President Acker of the company is heartening in its expression of support of the club's objectives and of the National Society's work in general:

Mr. Mason H. Bigelow, President
National Society for the
Prevention of Blindness
1790 Broadway
New York 19, N. Y.

Dear Mr. Bigelow:

I was very pleased to learn from your letter of December 11, 1957, of the rapid growth of the Wise Owl Club and I congratulate the Society on the successful work it is doing to prevent blindness. It seems especially appropriate to review your progress during this season of the year when you reflect on the personal and family unhappiness which has been prevented through the educational work of the Society.

Our Wise Owl Club at Central Hudson continues to be a very important and constructive factor in our efforts to increase our employees' awareness of the need to practice safe working habits.

In recognition of the outstanding work being done by your organization, I am happy to enclose our check . . . as the renewal of our contribution to the Society.

With best regards,

Yours sincerely,
ERNEST R. ACKER

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## JOIN NSPB STAFF

Edmund W. Maynard has joined the staff of the National Society as director of information service, succeeding Edward R. Fay, Jr., who is now with the National Nephrosis Foundation. A graduate of New York University, Mr. Maynard served three-and-a-half years in the U. S. Army during World War II. He has had several years of public relations experience with hospitals. Earlier he was director of public relations for the Goodwill Industries of San Bernardino, California, and was with the IBM Corporation of New York.

Wayne R. Green has joined the NSPB staff as chief of News Bureau. He replaces William Fisher, Jr., who is now with Victor Weingarten Public Relations. Mr. Green was formerly with Collier's and on the public relations staffs of Norwalk (Conn.) Hospital and Moore & Co., Advertising, Stamford.

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## FOUNDATION FOR TAY-SACHS DISEASE

A nonprofit foundation has been set up to promote research in Tay-Sachs disease, a blinding affliction, and allied familial neurodegenerative diseases of infancy and early childhood. The foundation is composed of parents of afflicted children, interested laymen and medical personnel who are cooperating with an existing research program in this field at Jewish Chronic Disease Hospital in Brooklyn, New York. Information may be obtained from the Medical Committee, National Tay-Sachs Association, Inc., Box 1250, G.P.O., N.Y. 1.

# AROUND THE WORLD

## GREAT BRITAIN

***Eye Hospital Centenary.*** A century of service by the Royal Eye Hospital was celebrated by a thanksgiving ceremony in Southwark Cathedral, London, in October 1957. It was the first eye hospital to be established south of the Thames, while there were twelve in the older parts of the city. Its founder, John Zachariah Laurence, stamped the hospital with an exceptionally high quality, which his successors maintained. One of its great services has been the supervision of the eye health of school children, which has continued without interruption since 1910. The hospital was severely damaged by incendiary bombs in May, 1941, but kept going by transferring some of its bed patients to other hospitals. Of late years the research activities traditional to this institution have been expanded.

***Partially Seeing Children.*** A correspondent of the *British Medical Journal* protested in a recent issue against the practice of sending partially seeing children aged only five years to boarding schools. "I consider this to have serious ill effects on their emotional development and likely to add maladjustment to their physical handicap," he wrote.

## JAPAN

***Dr. Bietti's Trachoma Survey.*** An encouraging report has been made by Dr. Giambattista Bietti, WHO expert on trachoma, who visited Japan late in 1956. In an intensely active month he visited many of the islands, met 40 professors of ophthalmology and more than 600 oculists, examined hundreds of cases, and exchanged ideas with the many scientists active in trachoma research.

In his report, recently published by WHO headquarters in Geneva, Dr. Bietti estimates that 10 per cent of the population have trachoma, i.e., about 9,000,000 people, especially those in nonurban areas. It is a less severe form than occurs in the Arab nations, East Africa, or even Italy. Both the incidence and the severity of the disease seem to be declining. Among patients at the eye clinic of the University of Tokyo the percentage of trachoma cases fell from 27 in 1924 to 2.6 in 1955. Use of the tetracyclines, especially acromycin, is resulting in a high proportion of cures.

Current Japanese research includes a study of the possibility of an allergic component in the genesis of trachoma. This would explain the phenomenon that trachoma patients, taken away from their infected surroundings, tend to cure spontaneously. But Dr. Bietti finds arguments on both sides of the question.

During his tour Dr. Bietti visited the Philippines, where he found a mild form of trachoma like that of Japan occurring in about 12 per cent of the school children. He also visited Taiwan and gave advice about the conduct of the mass anti-trachoma drive being conducted there by WHO officials.

***New Journal of Ophthalmology.*** A journal written entirely in English has begun publication in Tokyo, with the purpose of acquainting the ophthalmic community with the research work of Japanese ophthalmologists. The edi-

tor-in-chief is Dr. Hogari Hagiwara, professor of ophthalmology at the University of Tokyo.

## PARAGUAY

***Blindness Prevention Center.*** In a news item in the Fall 1957 issue of the *Review* credit should have been given to Dr. Honorio Campuzano as the founder of the Blindness Prevention Center in Asuncion, Paraguay. Since January 1956 this center has done valuable work in providing eye surgery, glaucoma tests, glasses and consultation service to thousands of persons.

The Second Pan American Congress of Ophthalmology, held in Montevideo in 1945, recommended the organization of blindness prevention centers in various Latin American countries.

## SYRIA

***Glaucoma Chief Blinding Cause.*** A study made for the Syrian Society for the Prevention of Blindness of 252 persons blind in both eyes showed that 42 per cent had lost their sight as a result of glaucoma. The report, by Robert Jebejian of Aleppo, was published in the *Journal D'Ophthalmologie Sociale* for the second quarter of 1957. Of the series 141 were peasants and 111 were city dwellers, and the incidence of glaucoma was about the same for both groups. A third of the total had been blinded, usually before the age of five years, by external infections: ophthalmias, trachoma, and exanthems. Ophthalmia neonatorum has been virtually eliminated. Of the 504 eyes studied, only one had been blinded by cataract. There were 80 cases of leukoma, 86 of atrophy of the globe, and 39 of retinitis.

The Syrian Society for the Prevention of Blindness has succeeded in getting a law passed allowing enucleation of eyes from cadavers for scientific purposes, the first act of this kind in the Near East.

## RUSSIA

***Scrofula Blinds Many Children.*** A report on the causes of blindness among children in Russian schools for the blind appeared in an abstract in *Excerpta Medica* for September, 1957. One-fourth of the children had been blinded by scrofula, a form of tuberculosis. Another fourth of the children had been blinded by trauma, 22 per cent had congenital anomalies, while 11 per cent suffered diseases of the central nervous system. The authors of the report, G. D. Vilkitskaya and N. I. Pillman, recommend better care for the eyes of preschool children, and the study of congenital blinding diseases and disorders of the central nervous system. They argue that improvement of nutrition and hygienic conditions could prevent much blindness from scrofulous diseases of the eye.

## WEST AFRICA

***Eye Surgery in Lambarene.*** A memorable visit to Dr. Albert Schweitzer is described by Dr. Arno E. Town, ophthalmologist of New York, in *Guildcraft* for November 1957. Enroute to a mission hospital in Liberia Dr. Town and his wife stopped to meet "Le Grand Docteur," who had prepared for their visit by sending for more than 50 patients with bad-to-hopeless eye conditions.

The Schweitzer Hospital, Dr. Town writes, consists of 45 rough buildings, with no running water and just enough electricity for the operating room. The patient brings along members of the

family, who share his cubicle, give him nursing care, and cook on a wood fire outside each section. There are no sheets or pillows on the bunks; a bundle of sticks may prop up the head. These primitive conditions are deliberate policy; Dr. Schweitzer knows the natives are used to them and will return to them, and would only be confused by alien facilities. Incurable patients, however, are kept in hospital indefinitely, since they would be killed as burdens if they returned to their tribe.

One such patient was a boy who had used dynamite in fishing and had ruined both eyes, obliterating the anterior chambers. Dr. Town examined lepers with conjunctivitis due to trichiasis, patients with optic atrophy from syphilis and/or moonshine liquor, others with cataract which had been maltreated by tribal medicine men, and a surprisingly large number of glaucoma cases. Dr. Town did what he could during a two-day visit which Dr. Schweitzer's graciousness and energy made the "experience of a lifetime."

Later Dr. and Mrs. Town visited the Ganta Mission in Liberia founded 30 years ago by Dr. George Harley, a humanitarian of the Schweitzer stamp. There they found a thriving, self-sufficient community. The chief eye diseases were cataract, glaucoma, and corneal leukoma.

### WEST PAKISTAN

***Mass Eye Surgery Succeeds.*** Working under primitive conditions, ophthalmic surgeons at the Henry Holland Mission Eye Hospital in Shikarpur are restoring sight to thousands every year. A recent guest surgeon, Dr. Roland I. Pritikin of Rockford Memorial Hospital, Illinois, reported to the International College of Surgeons that the percentage of successful operations for cataract, glaucoma, and other eye diseases was as high as in the most fully-equipped hospital.

The Shikarpur hospital has electricity, but no running water or inside toilets. Patients are cared for by relatives who cook on the hospital grounds, using dried cow-dung for fuel. Holding surgical and nursing services to a minimum, the staff managed to treat 3,000 patients from Pakistan and Afghanistan this year.

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### DOCTORS' BILLS AND INFLATION

During the last twenty years surgeons' fees have increased only 60 per cent, while transportation fares and movie admissions have risen about 114 per cent. The general practitioner now charges 73 per cent more than in 1936, and the dentist 82 per cent, according to the latest Consumer Price Index. However, hospital room rates have mounted by 265 per cent in these two decades. From 1929 to 1951 the average level of physicians' incomes rose slightly behind the average of all gainfully employed, 122 and 125 per cent respectively.

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### SPECIAL TEACHERS WANTED

Examinations will be given in the fall of 1958 for teachers of classes for the blind and for the partially seeing in the New York City school system. The program for the visually handicapped is integrated into the general school programs and is carried through all academic levels. Candidates for license as special teacher need a college degree, specified credits in general and special education, and 12 semester hours in appropriate courses. Information may be obtained from Dr. Harold Fields, Board of Examiners, Board of Education, 110 Livingston Street, Brooklyn 1, New York.

# CURRENT ARTICLES

***Glaucoma, 1956–1957.*** B. Becker. *AMA Archives of Ophthalmology*, Vol. 58, p. 862. December 1957.

In his annual review of the glaucoma literature the author covers the fields of study and clinical experience as reflected in 884 books and articles appearing in the year ending in July 1957. Progress continues to be made in our understanding of glaucoma in terms of aqueous secretion and outflow, but the newer work discusses these processes in less mechanical terms. Both secretion and outflow may be subject to nervous and vascular controls and possibly to endocrine and metabolic processes occurring elsewhere in the body.

One of the most important public health problems facing ophthalmology is the development of effective screening methods. Much was written during the year on the problem of eliminating the sources of error in tonography, and again there was emphasis on the value of perimetry in making a diagnosis. A combination of tonometry and testing of visual fields has been used effectively in screening a series of persons over the age of 40 years.

***The Unreliability of Tactile Tension.*** J. E. McDonald and W. M. Caygill. *Journal of the American Medical Association*, Vol. 165, p. 1131. November 2, 1957.

To test the accuracy of tactile tensions by palpation through the eyelids, a group of 21 examiners estimated intraocular pressures in 524 eyes of patients at the Research and Educational Hospitals and the Illinois Eye and Ear Infirmary of the University of Illinois, Chicago. Most of the examiners were ophthalmologists; the group included two full professors of ophthalmology, three assistant professors of ophthalmology and three clinical assistant professors.

All patients had glaucoma or were strong suspects, and this fact was known to the examiners. They were asked to give a numerical estimate of their findings, which were then checked with the Schiøtz tonometer for each patient. The doctors were not told the results until they had finished their quota of patients.

The overall mean deviation of the physician's estimate from the tonometer readings was 6.8 mm. of mercury. Accuracy of diagnosis did not depend on experience; acknowledged authorities on glaucoma did worse than the ophthalmology residents. The range of deviation went from the extremes of + 26 to −37 mm. of mercury, and all physicians averaged an error of 15 mm. on the high side and 19 mm. on the low side.

The examiners were wrong nearly two-thirds of the time when asked to indicate eyes having 28 mm. pressure or more—that is, eyes probably glaucomatous. Of the 186 eyes they felt had elevated pressures, only 67 (36 per cent) were found by the tonometer to be high; the other 119 (64 per cent) were 27 mm. or less. There was a general tendency to estimate the tensions too high because the physicians knew they were dealing with glaucomatous patients.

However, the doctors were only 47 per cent right in estimating pressures the tonometer found elevated. There

were 141 patients with a Schiøtz reading of 28 mm. or over, and the examiners found only 66 of them, missing 75.

This study shows that the widespread belief that tactile tension is fairly reliable is a dangerous illusion. Since there is a probable two per cent incidence of undetected glaucoma in the population over 40 years of age, routine tonometry should be part of the general physical examination.

***Some Psychosomatic Aspects of Primary Glaucoma.*** R. D. Harley. *Journal of the Medical Society of New Jersey*, Vol. 54, p. 442. September 1957.

Every ophthalmologist recognizes the importance of emotional factors in glaucoma. The disease can probably be attributed to neurovegetative dysfunction, an absence of the normal balance between the sympathetic and parasympathetic systems. Added to this organic dysfunction there is evidently a psychic component.

Five case histories are cited to illustrate how shock or severe emotional stress precipitated acute glaucoma. A similar mechanism is probably involved in chronic simple glaucoma. The author feels evidence is accumulating to show the close relationship between intraocular vascular circulation, aqueous secretion, the level of intraocular tension, and their control by the autonomic nervous system.

In treating glaucomatous patients the author uses an admittedly superficial form of psychotherapy with the aim of giving the needed emotional support. He has also tried drugs to control the stress associated with increased ocular tension. Since the hypothalamus is the important integrating mechanism for neurovegetative and emotional reactions, Rauwolfia and chlorpromazine were selected because of their unique depressant action on both the central and autonomic nervous systems. They proved highly effective, especially chlorpromazine, in treating chronic glaucoma where stress is a factor in causing additional rises in tension.

***Congenital Glaucoma.*** H. H. Gurau. *Journal of the Iowa State Medical Society*, Vol. 57, p. 680. November 1957.

Until recent years the prognosis for congenital glaucoma was poor. Now the development of goniotomy and goniopuncture, and a better understanding of the nature of the disease, have changed the picture. In 1955 Drs. Braley and Burian demonstrated that in congenital glaucoma there is an incomplete cleavage between the cornea and the iris, and this blocks the aqueous outflow. If surgical intervention is prompt, the aqueous is given access to the trabeculum, and further progress of the disease is checked.

Early diagnosis is therefore important, if difficult. The most common symptoms are photophobia, blepharospasm and epiphora. What parents observe are enlargement of the globe and a cloudy cornea. In three out of four cases glaucoma manifests itself before the age of six months. Measuring the intraocular tension must be done under deep anesthesia and is not always reliable. Gonioscopy of the glaucomatous baby reveals a very deep anterior chamber and an absence of the chamber recess. In the differential diagnosis megalocornea is important, also high myopia (which may also accompany congenital glau-

coma) and congenital idiopathic edema of the cornea.

Once the diagnosis is clear no time should be wasted on medical treatment, which is without value. The best hope for arresting the disease is early surgery; the longer it is allowed to progress the more changes take place in the eye. The operations of choice are goniotomy or goniopuncture, alone or in combination.

***Vaso-Motor Factor in Glaucoma.*** E. Gordon Mackie. *British Journal of Ophthalmology*, Vol. 42, p. 1. January 1958.

The author discusses the evidence that vascular disturbance is a major etiologic factor in glaucoma, complementing a structural or episodic resistance to outflow. He questions the hypothesis that the disease is associated with an excess output of adrenergic materials, and believes that some factor causes excess sensitivity of the vasomotor system to normal adrenergic stimulation. He identifies this factor as vasoexcitor material (VEM) produced by the renal cortex under a condition of relative anoxia. Normally the kidney is kept under high oxygen tension.

The VEM mechanism is a natural concomitant of the aging process, and in younger persons the mechanism may be triggered by anxiety or stress. It acts on the fine blood vessels, which are those involved in glaucoma, making them pathologically sensitive to adrenalin. The author found this hypersensitivity in patients with both congestive and simple glaucoma by slit-lamp observation of fine conjunctival vessels reacting to adrenalin and noradrenalin.

Many other factors are part of the glaucoma picture, but in treating the patient one element might be the reduction of VEM by increasing effective renal blood flow. The author tried various therapies in a small number of new glaucoma cases and a large number of old cases with a persistent intraocular tension of 40 mm. of mercury or over despite surgery and/or drops. He found that vitamin A was effective in increasing renal blood flow, while vitamin D had the opposite effect. Vitamin A also aided dark adaptation and in half the patients had a marked subjective effect. It should be given orally in pure form, but dosage is still to be established.

Of the therapeutic agents used the author found hydergine, apresoline and veratrum of most value. The first two were often used in combination, and veratrum was effective when combined with apresoline or rauwiloid. Miotics were also used.

Of the first 80 patients, many of whom had failed to respond to classic methods of treatment, 40 improved markedly, 29 slightly, and 11 not at all. Failures could be due to errors in the therapy or to the fact that outflow resistance was the chief factor. In the 40 who responded favorably there was a fall in intraocular pressure and blood pressure and an increase in visual field and visual acuity. Charts illustrate the sustained effect of the therapy. In one woman of 72 whose intraocular pressure had ranged from 30 to 40 mm. for seven years it was stabilized at a normal range. A patient of 64, given hydergine over a nine-months period, showed a fall in blood pressure from 200 to 150 and enlargement of the visual fields from 20 to 45 degrees.

The therapy discussed here was directed at the vascular factor only.

The author adds suggestions about the general treatment of the glaucoma patient, stressing the importance of psychotherapy. He advises the use of vasodilators and a high vitamin intake for older patients, and in younger ones (the anxious, hard-working type) less reliance on sedatives and more on general management of the patient's life to avoid stress and other provocative influences.

***Infantile Fundus Lesions in Relation to Mental Capacity.*** J. H. Doggart. *British Medical Journal*, October 19, 1957, p. 933.

When there is reason to suspect eye trouble or mental defect or both to account for a baby's backwardness in general development, ophthalmoscopy may often yield essential information. Severe fundus lesions may clinch the diagnosis in Tay-Sachs disease, toxoplasmosis or other conditions, and they must be taken seriously as indicating mental impairment. But the gravity of certain symptoms is often exaggerated.

An infant's blank stare may mean a brain injury or maldevelopment, but it may occur in a child with normal eyes. A baby who seems mentally backward may simply be a late starter because he suffered birth trauma. However, uniform backwardness during the first year of life usually means permanent defect of mind.

In order to have the careful examination which is necessary to a realistic prognosis the infant should be examined under general anesthesia, preferably in the hospital. Certain common sources of confusion should be kept in mind. Optic disk pallor is often misinterpreted; the infantile disk is normally paler than that of the child or adult. Blurred edges of the disk may occur in a perfectly healthy child. Congenital connective-tissue vestiges in or near the disk are usually harmless; and retinal hypoplasia is normal in a baby.

If optic atrophy or gross macular degeneration is certainly established, the parents must be advised how to deal with a blind child, and this is best done by the family physician. He should warn them against having more children in cases of Tay-Sachs disease, epiloia, and Schilder's disease.

***De l'utilité de l'examen systématique du fond de l'oeil chez l'enfant tuberculeux. The Value of Systematic Examination of the Fundus in the Tubercular Child.*** C. Dejean and Prat-Flottes. *Archives D'Ophtalmologie*, Vol. 17, p. 445. July–August 1957.

Since the optic nerve is the only one surrounded by meninges, and the retina is an outpouching of the cerebral cortex, it has become routine to examine the fundus in patients with meningitis or miliary tuberculosis. The author has found funduscopy a valuable means of detecting an insidious form of infantile tuberculosis different from the acute and subacute varieties. There are chronic forms localized in a small area and developing slowly, but capable of a sudden violent explosion.

The author presents 12 case histories of tubercular children in whom funduscopy revealed the chief symptom: pallor of the optic nerve, and in some instances edema of the disk, pepper-and-salt pigmentation of the retina, or choroiditis of the macular area. These indications serve to disclose a tubercular condition when other signs

are negative or hard to evaluate. Finding the insidious type of infantile tuberculosis in its early stages makes its arrest possible with antibiotic therapy.

***Experimental Studies of the Choroidal Vessels. V. Hemodynamic Observations.*** E. Wudka and I. H. Leopold. *A.M.A. Archives of Ophthalmology*, Vol. 58, p. 710. November 1957.

The circulation in the choroid was studied in the eyes of living albino rabbits, with changes induced by successive occlusion of the carotid and ciliary arteries and of the vortex veins. Ligation of the homolateral common carotid produced some narrowing of the long posterior ciliary arteries. Contrast dyes stained the larger vessels but did not help visualization of the choriocapillaries.

Occlusion of the ciliary arteries was followed by a compensatory flow of blood from the anastomotic channels or from the capillaries toward the obliterated vessel, often creating a retrograde flow from the veins. Observation a week later showed that only extensive occlusion caused irreversible changes. The collaterality in the vascular bed of the choroid is abundant enough to protect the ocular coat from damage following an isolated vascular occlusion.

Ligation of the vortex veins caused an immediate reversal of flow in some tributary veins, and as more vessels were tied there was complete stagnation of blood in some veins, and other changes.

Artificially increased intraocular pressure was for a time adjusted by transmission of the pressure to the veins, then the capillaries, and then to the arteries. Increased pressure finally produced collapse of the vessels which showed no active or passive dilatation.

This study was supported by a grant from the National Society for the Prevention of Blindness.

***Experimental Studies of the Choroidal Vessels. VI. Observations on the Effects of Physical Agents (Scleral Folding and Diathermy).*** E. Wudka and I. H. Leopold. *AMA Archives of Ophthalmology*, Vol. 58, p. 829. December 1957.

One requirement for the successful treatment of detached retina involves bringing it close to the pigment layer and its matrix the choroid. The effects of various surgical techniques on the choroidal vessels were studied in living albino rabbits.

The first procedure was lamellar scleral resection. The animals were divided into six groups and all the ocular coats were observed at postoperative periods of one, three, five and seven days, two weeks, and two months, and photomicroscopic records were made. The fundus picture was followed with the ophthalmoscope. Unfolding of the resected sclera occurred one or two weeks postoperatively, indicating that one beneficial effect of surgery is the temporary approximation of the outer ocular coats to the detached retina. This contact and the accompanying inflammatory reaction possibly induces an adherence that behaves as an artificial ora serrata, keeping the detached part of the retina from extending.

The effects of diathermy were checked at weekly intervals for a period of four months, by microscopic observation of the prepared animals.



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After diathermy the center of the lesion was avascular, and had a granular appearance which gradually cleared 12 weeks after surgery. The intermediate zone showed transient circulatory stasis which disappeared within six weeks. In the periphery of the diathermy all the affected vessels changed the direction of their flow, sometimes reversing completely, so that the blood soon followed the normal direction of flow prevailing in the normal surrounding areas.

Comparative study of different lesions showed that the smaller vessels were obliterated but the larger ones tended to remain open. Revascularization was much more efficient when the lesions were isolated and surrounded by normal tissue than when there were many diathermic points close together. In general, after diathermy the lesions tended to revascularize and the richness of secondary choroidal vessels compensated for the imbalances caused by surgery.

This study was supported by a research grant from the National Society for the Prevention of Blindness.

***A Study of the Relationship between Adenovirus and Epidemic Keratoconjunctivitis.*** C. Tanaka. *AMA Archives of Ophthalmology*, Vol. 59, p. 49. January 1958.

Additional evidence has been obtained of the role of adenovirus Type 8 in epidemic keratoconjunctivitis (EKC). Since 1955 various strains of this virus have been isolated in connection with epidemics in America, Asia and Europe. The present study was made at the Ophthalmology Branch, National Institute of Neurological Diseases and Blindness, on material sent by Dr. Y. Mitsui from Kumamoto, Japan. In that city during the summer of 1956 hundreds of persons were infected with EKC mediated through a swimming pool. To complicate matters, another epidemic, of pharyngoconjunctival fever caused by adenovirus Type 3, spread over the city at the same period.

Conjunctival scrapings from two cases were studied in Bethesda. From one a strain of Type 8 adenovirus was recovered. (Five others were isolated by Mitsui during the epidemic.) From the other case, which was clinically similar, a Type 7 adenovirus was recovered.

Paired acute and convalescent phase serums from 18 patients were tested for neutralizing antibody response to the Type 8 virus, and 16 demonstrated a rise in titer. Except for the patient with Type 7 infection, all 11 of the cases with corneal opacities demonstrated antibody response to Type 8. The seven cases of atypical EKC without corneal opacities in general responded to both Type 8 and Type 3 adenovirus, suggesting a dual infection.

***Comparison of Ocular Reactions Using Penicillin and Bacitracin Ointments in Ophthalmia Neonatorum Prophylaxis.*** A. M. Margileth. *Pediatrics*, Vol. 51, p. 646. December 1957.

A total of 7,774 infants was studied in the newborn section of the U. S. Naval Hospital, Corona, California to compare the effects of penicillin and bacitracin ophthalmic ointments. The former was used for two years ending in August 1956 and bacitracin ointment was then substituted and observed for a year.

There was a low reaction rate of 1 per cent to either ointment, and no

severe reactions occurred. This was expected since there was only one application of the ointment. If the eye remained clear for the first four days after birth and then became inflamed or developed a discharge it was considered a possible infection and not a reaction. If the infant was still in hospital a bacteriologic culture was taken, and of this group a proved infection occurred in 0.1 of the penicillin and 0.4 of the bacitracin series. No gonococcus was cultured, and there were no cases of maternal gonorrheal vaginitis during the study. It is interesting that all the bacteria obtained in the bacitracin group were gram-negative, and no staphylococci were cultured.

Since most of the maternity cases were discharged on the fourth day the great majority of real or fancied infections were reported by postcards furnished the mothers. No cultures were made in these cases. However, no infant had to be detained in hospital or readmitted because of an ocular reaction or infection.

While the author believes close observation of the newborn infant is better than any prophylaxis, he advocates bacitracin as a safe, effective and non-irritating ointment free from the disadvantages of penicillin.

***Experience of Treating Retinal Venous Occlusion with Anticoagulant and Antisclerosis Therapy.*** S. Vannas and H. Orma. *AMA Archives of Ophthalmology*, Vol. 58, p. 812. December 1957.

Chemotherapy proved valuable in treating cases of retinal venous occlusion at the Ophthalmic Clinic of the University of Helsinki, Finland from 1951 to 1956. The material presented includes 37 patients given anticoagulant therapy and a control group of 36 who were not so treated. Although the hospitalized group included 26 cases of central vein occlusions as against 17 in the control group, making the prognosis unfavorable for the majority of those treated, they showed superior results as regards vision, visual field, fundus changes, and secondary glaucoma.

The therapeutic program included an initial intensive treatment with heparin for a period of ten days to three weeks, followed by a long-term regime of combined anticoagulant and antisclerotic therapy. The short-term therapy proved effective in cases of occlusion by stagnation, but if sclerosis seemed to be the chief etiological factor long-term treatment was desirable not only for the sake of the patient's eye but for his life. Five of the control group died of cerebral or coronary thrombosis.

In 18 of the 26 patients with central venous occlusion the final vision was better than the initial; in seven it remained nearly unchanged, and in only one case deteriorated. In the more favorable cases of main branch occlusions, vision improved in all 11 cases, with the results rated as good in 10.

***Toxic Chorioretinopathy Following the Use of NP 207.*** E. L. Goar and M. C. Fletcher. *American Journal of Ophthalmology*, Vol. 44, p. 603. November 1957.

Of 34 psychiatric patients at Jefferson Davis Hospital, Houston, given NP 207, a phenothiazine derivative, as a tranquilizer 28 developed retinopathy. Eight cases were classed as severe, four moderate, 16 mild.

Onset was four or five weeks after dosage began, with a sudden loss of central and peripheral vision and night blindness. The ophthalmoscope showed increase in retinal reflexes, redness of the optic disk, and dilation of retinal vessels. Later a pepperlike pigmentation appeared. In the mild cases these spots remained after eight months, but the other symptoms had disappeared.

The severe cases were virtually blind, and two of them have not recovered. The pigment spots coalesced into clumps and in seven of the eight cases sheets of pigment formed in the midperiphery. All the patients with severe retinopathy received more than 800 mg. daily of the drug. The daily dose varied from 200 mg. to 2,800 mg. In the Mayo Clinic, which was also using NP 207 experimentally, the daily dose was 400 mg., and no visual disturbances were reported.

As soon as the visual effects of the drug were confirmed it was withdrawn and the patients were treated with steroids and vitamins. Six of the severe cases dropped into the moderately severe class with retained macular function, but night blindness, blurred vision and considerable field loss. While the moderately severe and mild cases improved, two mild cases showed deterioration in visual acuity and fields at the eight-months period. This indicated that the disease had not yet run its course.

***A Study of 1,000 Cataract Extractions.*** N. E. Christy. *American Journal of Ophthalmology*, Vol. 44, p. 649. November 1957.

The complications and visual results are reported for a series of cataract extractions performed during a seven-month period in the American Mission Hospital, Taxila, Pakistan. The surgeon who did most of the work might perform from 40 to 60 operations in a morning. The patients, mostly illiterate farmers with little idea of cleanliness, were kept in bed until the ninth postoperative day and were given a rough vision test on discharge.

The intracapsular method was used in 610 cases as against 365 given capsulotomy; sutures were used in only 37 cases. Postoperative vision was good in 92 per cent; the intracapsular method showing success in 93 per cent as against 87 per cent by extracapsular extraction. Comparing the two methods, the intracapsular method showed a higher incidence of transient striate keratitis and delayed formation of the anterior chamber, and a lower incidence of cortex and visible capsule in the anterior chamber or pupil.

***A Study of Trachoma Dubium.*** L. D. Cady, Jr. *American Journal of Ophthalmology*, Vol. 45, p. 41. January 1958.

A study was made to determine whether the form of follicular conjunctivitis called trachoma dubium may be an early stage of trachoma. A 250-square-mile area in Wright County, Missouri was chosen as representative of the trachoma belt, with a relatively high prevalence of arrested cases of classic trachoma, and of trachoma dubium. The study was supported by the state Division of Health and the U. S. Public Health Service.

The eyes of about 2,000 elementary and high school children were examined by the author, who found one case of classic trachoma, and 25 cases

of trachoma dubium. He followed 16 of these for one year, and 32 other cases of trachoma dubium selected at random from cases seen at the Trachoma Clinic hospitals scattered over southern Missouri.

Laboratory studies of 20 smears from 10 cases showed no inclusion bodies or other cytologic changes suggestive of trachomatous infection. Since sulfonamide or terramycin therapy has proved effective in curing classic trachoma it seemed of interest to study the response of the patients with trachoma dubium. At the end of one year there was no significant difference between the treated and untreated groups in percentage of improvement. A third test was epidemiologic. Trachoma is recognized as a "family disease," but in the households of 16 of the trachoma dubium cases not a single case of trachoma was found.

The author concludes that the 48 cases studied do not in any way support the hypothesis that trachoma dubium is an early or mild form of classic trachoma.

***The Medical Eye Examination.*** R. C. Gamble. *The American Journal of Nursing*, Vol. 57, p. 1590. December 1957.

There are characteristic eye findings in many general diseases which help to establish a diagnosis. Severe acute iritis is often a symptom of secondary syphilis. Other indications of the disease may be chorioretinitis, optic neuritis, primary optic nerve atrophy, or disturbances of the extraocular muscles.

Patients with extensive tuberculosis elsewhere in the body rarely have a tuberculous eye disease, but such disease may occur in slight and even unsuspected cases. Interstitial keratitis, especially of the phlyctenular type, is a common symptom. Lesions of the iris, ciliary body, choroid and retina resemble those of syphilis but have a different course.

In diabetes the usual ocular changes are retinopathy and cataract. Diabetic cataract in young persons is binocular and rapid in development; in older patients the usual senile cataract develops much faster than in the nondiabetic person. Nephritis may cause retinal changes valuable in diagnosis: narrrowing of the retinal arteries, edema, hemorrhages, and exudates.

Examination of the eye often helps in the detection of a brain tumor, and even its location. Edema or atrophy of the optic nerve or changes in the visual fields, or perhaps all three, result from tumors. Many diseases of the central nervous system affect the eye. Ocular symptoms are often the first indications of multiple sclerosis, for instance. Thyroid and parathyroid diseases may have striking eye symptoms.

***Surgical Approach to Intraocular Foreign Bodies.*** M. Croll and L. J. Croll. *American Journal of Ophthalmology*, Vol. 44, p. 745. December 1957.

Experiments with freshly prepared pigs' eyes yielded data about the behavior of metallic foreign bodies as the magnet is used, and the reactions of the choroid, vitreous and retina. Repeated study of the motion pictures taken during experiments and analysis of 101 cases carefully recorded overseas during the Second World War showed that damage to the vitreous was of paramount importance. The

vitreous has a low metabolism and does not recover readily from traumatic insult. In the procedure here described the vitreous is not touched by the magnet.

After precise localization of the foreign body it is approached through the relatively avascular pars plana. The sclera is dissected down to the choroid, then a hand magnet is applied to the choroid, which closes of its own accord after delivery of the foreign body. Fifteen random cases of such operations are tabulated, showing that unless the initial trauma was too severe the patient recovered useful vision.

The authors have devised a hand magnet which has a greater range than the ordinary type, and are hoping to design one with a range of 18 mm. as against the 10 mm. range of the magnet now in common use. The giant electromagnet is considered too cumbersome for use in precision surgery.

***Emergency Treatment of Eye Injuries.*** A. N. Lemoine, Jr. *Journal of the Iowa State Medical Society*, Vol. 47, p. 728. December 1957.

In some eye injuries the initial treatment determines whether the end result will be blindness or useful vision, and since this treatment is seldom given by an ophthalmologist certain procedures should be familiar to all physicians. A common error in emergency treatment is doing too much rather than too little. The repeated use of local anesthetic agents, for instance, may be harmful; pain should be controlled by systemic medications.

Any physician can deal successfully with foreign bodies in the epithelium and Bowman's membrane, but if the object is below the membrane there is risk of injuring the corneal stroma. All intraocular foreign bodies should be managed by an ophthalmic surgeon, and abrasions and lacerations which penetrate the anterior chamber are also to be handled by the specialist. The general practitioner who treats less serious abrasions should follow certain precautions to avoid recurrent erosion of the epithelium. In lacerations there is danger of corneal infection, and the eye should have a careful daily inspection until it is completely healed.

Contusions are potentially serious, and should if possible be treated by an ophthalmologist. If there is hemorrhage into the anterior chamber or vitreous—and this may occur at the time of the accident or within the next few days—the eye may deteriorate rapidly. Glaucoma, cataract, or retinal separation are among the late complications. If the initial picture is an eye free of pupil distortion, hemorrhage, or softness, prognosis may be reserved for about three days during which active treatment, especially dilation of the pupil, should be postponed and the patient kept quiet and under observation.

***Prevention of Eye Injuries in Connecticut Industries.*** E. M. Blake. *Connecticut State Medical Journal*, Vol. 22, p. 38. January 1958.

In order to determine the extent to which employees in the heavy industries in Connecticut are protected from eye injuries, the manufacturers were queried by the Connecticut Chapter of the National Society for the Prevention of Blindness. Replies were received from 238 firms, repre-

senting 51,318 employees. Of this number 14,078 were reported as equipped with protective lenses. In most cases the equipment was supplied by the company; in a few the employees paid half the cost, and in one firm they were required to pay the entire cost.

Among the comments volunteered by the companies one said: "The company pays for the glasses. At the outset of the program there was some resistance to wearing safety glasses but in the end they have been more than accepted. The company has found that the reduction of eye injuries is down from 8.2 per cent to 1.4 per cent."

Laymen as well as physicians should act as ambassadors of safety. One important rule is that the individual with one eye or with a defective eye should wear shatter-proof lenses at all times. Garage repair men often risk losing their sight from flying bits of metal, and road workers swing pickaxes against stone or drill rock with no protection against eye injury. There are countless opportunities for those interested in eye safety to speak up for protection.

***Plano Problems in a Safety Program.*** G. C. Hill. *American Journal of Optometry*, Vol. 35, p. 25. January 1958.

Employee acceptance of an eye safety program may be endangered by the complaints of a few persons who do not wear spectacles and claim their plano safety glasses cause discomfort. The three sorts of people with plano problems include those who are totally uncooperative about wearing any safety devices; those who blame a condition like presbyopia on their planos; and those who experience headache, blurring or asthenopia when they wear safety glasses, but not at other times.

Of the 3,900 employees of the Norfolk Naval Station wearing planos 26 reported difficulties during the first half of 1957 and were given careful study. They belonged to the third category; their problems were real, and their symptoms cleared up when the proper solution was found. Nine men needed to have their safety glasses adjusted or replaced; 16 needed prescription glasses, and one employee, referred for conjunctivitis, also had a refractive error needing correction.

Seven prescriptions were given for low astigmatism, six for plus spheres, and three for bifocals. These workers with refractive errors had not noticed any eye symptoms when off the job; evidently something about the planos made them conscious of their eyes.

A follow-up of all 26 employees showed that safety glasses were no longer causing discomfort.

***The Spans: Perception, Apprehension, and Recognition as Related to Reading and Speed Reading.*** E. A. Taylor. *American Journal of Ophthalmology*, Vol. 44, p. 501. October 1957.

Introduction of the ophthalmograph in 1932 made it possible to obtain accurate reading graphs, and in 1937 the author compiled a table from over 5,000 eye-movement records of subjects ranging from first-grade children to college students. Modern studies disprove the notion that the skilled reader can take in several words at a single eye-stop. The first-grader averaged 0.42 words per fixation, and this

span of recognition increased gradually to an average of 1.33 words by the college student. The average rate of comprehension of words per minute mounted from 75 to 340 in this series.

The three spans used in reading should be differentiated. The span of perception in reading print is probably confined to foveal and parafoveal vision. The span of apprehension is related to speed but not necessarily to good reading. Organization of what is perceived makes the good reader, and with practice the span of recognition widens. The reader's ability to increase the accuracy and speed of reading are of little importance unless he can interpret what he sees. He has little voluntary control of his visual apparatus, and cannot increase his reading speed automatically and expect his comprehension to keep in step. The object of good instruction is to enable the student to read for long periods of time without discomfort and tension. Some individuals can read at 1,000 words or more a minute, but most adults range from 250 to 300, and graphs of college professors show they read from 350 to 500 words a minute.

***Epidemiology of Reading Disabilities; Some Methodologic Considerations and Early Findings.*** A. D. Miller, J. B. Margolin and S. F. Yolles. *American Journal of Public Health*, Vol. 47, p. 1250. October 1957.

The authors feel that reading disabilities have important implications for mental health. Serving under the National Institute of Mental Health, they are studying the problem in a Maryland county, and have found a high incidence of reading backwardness among children seen at the county mental health clinic. Of 536 children aged 7 through 17, about 13 per cent were diagnosed as mentally deficient and 7 per cent of the total group were referred primarily because of reading difficulties. In the remaining group of 427 children 30 per cent of the boys and 22 per cent of the girls were observed to be poor readers.

To get an idea of the situation in the entire county the reading scores of about 10,000 children in the third and fifth grades were analyzed. About a fifth of the third graders were below par; 12 per cent of the girls and 27 per cent of the boys. In the fifth grade 16 per cent were retarded; 21 per cent of the boys and 10 per cent of the girls.

Environmental factors in the problem are still being studied, but it is already apparent that there are areas of high and low incidence in the county. School districts with the better reading level were rated at least one quartile better in quality of housing and other socioeconomic factors than the districts with lower reading levels.

***Highway Visibility in Fog.*** C. Marsh. *Illuminating Engineering*, Vol. 52, p. 621. December 1957.

The problem of fog on turnpikes is now being investigated at Pennsylvania State University. What has so far been learned applies to land, marine and air travel. Since the visibility of objects is reduced by fog droplets scattering light, the aim is to reduce this scattering and to increase the visibility of light sources and markings.

It has been found that headlamps should illuminate the minimum volume of fog between the driver and the road, and be placed so that the beam is at a right angle to the viewer's line

of sight. Thus headlamps should be placed as low as possible so that they project light in a thin layer close to and parallel to the road surface. The most effective fog light system so far developed is a polarized spot lamp and cross polarized viewer.

As for rear lamps, a good marker is a red lamp placed so that its beam will fall either above or below the eye level of the overtaking driver. A promising setup under study is for green and red lamps flashing in alternation.

Progress has been slower in fixed highway lighting, with polarized illumination showing interesting possibilities. A test of converted mercury vapor lamps is being made on a short section of the New Jersey Turnpike. Shields have been installed to eliminate direct glare and reduce light scattering. The performance of these fixtures seems better than that of the unshielded lamps.

***Vision: Do We See What We Think We See?*** B. F. Payne. *Traffic Safety*, Vol. 51, p. 20. December 1957.

Poor eyesight is estimated to cause from three to five per cent of motor accidents. While vision requirements for commercial drivers are tending to become more strict, there should be a national standard for all drivers. This should be higher and more inclusive than that now considered adequate.

Doctor Payne urges that correctible vision of 20/20 for each eye should be required. An evaluation of vision in relation to motion and moving objects should be made in the laboratory and on the highways in order to establish norms. Diplopia caused by fatigue, injury or disease may cause accidents, and a test for double vision should be included in the examination.

## HAZARDS IN ANESTHESIA

Occlusion of the central retinal artery following major surgery is discussed by Dr. G. Klomp of Göttingen, Germany, in an article abstracted in the *Survey of Ophthalmology* for August 1957. He cites a case of unilateral blindness in a woman patient who the day before had received inhalation anesthesia during a two-hour operation. Apparently the arterial occlusion had been caused by pressure on the eyeball by the tubing of the anesthesia mask, which had become displaced.

Dr. Klomp reported five similar cases in the literature; in each one the tubing of the apparatus was on the affected side. In eight other cases permanent unilateral blindness resulted from pressure on the eyes from a headrest used in neurosurgery. During anesthesia constant control of the face mask is essential to protect the eyes. If a patient complains of visual disturbance after an operation, an examination should be made at once. Only prompt treatment of an arterial occlusion can prevent blindness.

## EXTRA GLASSES FOR DRIVERS

Two new recommendations for safe driving were approved by the Council of the Medical Society of the State of New York in September 1957. One was that the commercial or transportation driver who wears a correction should have an extra pair of usable glasses on his person while driving. The other concerned holders of a junior driving license. Because myopia is apt to increase between the ages of 16 and 21, the Council recommended that young drivers be given an eye examination before they are granted a senior license.

These recommendations were among others pertaining to medical standards transmitted to the Commissioner of Motor Vehicles for his guidance.

# BOOKS AND PAMPHLETS

**Psychosomatic Ophthalmology.** T. F. Schlaegel, Jr., M.D. The Williams & Wilkins Company, Baltimore, 1957. 500 p. $11.00.

Because of the prevalence of emotional factors in eye troubles the author urges that the ophthalmologist should understand psychotherapy. He has the task of treating a condition like uveitis or central angiospastic retinopathy, and also of helping the patient to mature emotionally. Dr. Schlaegel, a qualified psychiatrist as well as a teacher and practitioner of ophthalmology, adds many of his own case histories to those he has culled from the large literature on the subject.

Taking up one eye structure after the other, the author discusses the myriad and often complicated mind-body conditions which precipitate trouble. The uveitis patient, in his experience, is often a person with a marked need for dependence and reassurance who has recently undergone a period of increased responsibility or other stress. Because of his particular organic setup this strain affects the eye. He is helped by bed rest, especially if it is in hospital where he can indulge his need for dependence.

The glaucoma patient is very often anxious, overconscientious, depressed, and badly adjusted to those close to him. The emotional factors seem to vary as between the sexes and the type of glaucoma. In discussing therapy Dr. Schlaegel admits that glaucoma patients present difficulties because they are often older persons with stiff personality patterns, but he feels that they can frequently be helped to control their disease by accepting a calmer mode of life.

In the final chapters Dr. Schlaegel discusses the psychosomatic approach to treatment of children and adults who suffer from troubles all the way from hysterical amblyopia to blindness. The student and practitioner will find much of interest in this comprehensive book.

**The Sheard Volume: Selected Writings in Visual and Ophthalmic Optics.** Charles Sheard, Ph.D. Chilton Company, Philadelphia, 1957. 467 p. $15.00.

A committee of 30 ophthalmologists, opticians and optometrists sponsored this volume as a tribute to Dr. Sheard. In their foreword the sponsors say: "The fact that we of today think of vision chiefly in dynamic and functional terms and from the standpoints of accommodation and convergence is due largely to the vigorous presentations of Charles Sheard."

In choosing material from nearly 300 publications running back to 1909 the editors have given most space to subjects in which Dr. Sheard was often breaking new ground. Monographs on "Dynamic Ocular Tests" (1917) and "Dynamic Skiametry" (1920) present his early work on accommodation and convergence. The modern practitioner is offered the long section, "Ophthalmic Optics with Applications to Physiologic Optics," first published in 1950 and amplified with formulas, case histories, figures and tables.

The bibliography reflects Dr. Sheard's wide range of interests and his growing attention to physiology.

The effects of radiant energy on plant and animal tissues, dark adaptation and night blindness, and much research on the thermal regulation of the body in normal and pathological conditions have been discussed in many papers, a few of which are included in this volume. The first section contains selected essays and editorials from the *American Journal of Physiological Optics*, written during Dr. Sheard's editorship.

Now in the department of ophthalmology of the Graduate School of Medicine at Tulane University, Dr. Sheard maintains a full schedule of activity. He has long been a member of the board of directors of the National Society for the Prevention of Blindness.

**Fads and Fallacies in the Name of Science.** Martin Gardner. Dover Publications, Inc., New York City. Second edition, 1957. 363 p. Paper, $1.50.

This volume deals with a wide spectrum of pseudoscience, from wandering moons and food fads to dowsing and naturopathy. It makes fascinating reading, but its purpose is serious; the false priests of science, especially of medicine, can be dangerous.

In the chapter, "Throw Away Your Glasses!" Mr. Gardner deals with a cult which has brought needless tragedy to many persons. Its founder, Dr. William Horatio Bates, carried on an eye, ear, nose and throat practice in New York City until his early forties. Then, according to newspaper reports, he broke down; it was after years of amnesia and fugue that he wrote in 1920 his first book, called by Gardner "a fantastic compendium of wildly exaggerated case records, unwarranted inferences, and anatomical ignorance." He denied the established role of the lens in accommodation, and claimed that the origin of all refractive errors was wrong thinking, which produced "strain." He devised his exercises for "central fixation" to relieve this strain, and decided that central fixation not only cured refractive errors, but was the magic remedy for glaucoma, incipient cataract, syphilitic iritis, any and all eye diseases. "I am unable to set any limits to its possibilities," Dr. Bates wrote.

This unlimited panacea was swallowed by legions of what the author calls "intelligent but ill-informed people," including many in Hitler's Germany.

Mr. Gardner gives several reasons for the persistence of this system. It has had effective propagandists: Bernarr Macfadden, Harold M. Peppard, Gaylord Hauser, and the almost-blind Aldous Huxley. A fundamental factor is the will-to-believe, but there are others. Some persons who do not need glasses buy them from a source that is less than competent or ethical. "Their eyes adjust to them, so that when the glasses are first removed, the vision is noticeably poorer." Then the eyes readjust, and vision improves. Another victory is chalked up for the Bates exercises. The faddists claim other victories which are in reality due to the marvellous powers of the eye itself, to remissions in certain cyclic diseases or to changes for the better as the person ages.

"The real tragedies occur," Mr. Gardner writes, "when a Bates enthusiast suffers from glaucoma, atrophy of the optic nerve, or some other ailment which may demand immediate

medical attention before it leads to blindness. . . . The moral is that when you encounter a new medical theory, universally condemned by the 'orthodox,' you will do well to take their word for it."

Because of the author's evident careful research, the book is an excellent contribution in showing up many of the current fads and frauds in health.

**Management of Complications in Eye Surgery.** R. M. Fasanella, M.D., editor. W. B. Saunders Company, Philadelphia, 1957. 408 p. $16.00.

The subtitle of this admirable book defines its approach: "Avoidance of Pitfalls and Treatment of Difficult Situations in Ophthalmologic Operations." As Dr. Fasanella remarks in his preface, "Pitfalls, if not avoided, inevitably result in complications, and precautionary measures are therefore stressed." The twenty distinguished ophthalmogists who contribute chapters reflect this point of view.

The whole field of ophthalmic surgery is covered. In addition there are chapters on anesthesia and the medical and psychiatric factors which should be taken into account, and on medically responsive complications following intraocular surgery, the use of radiation in certain complications, and the rehabilitation of the low vision patient. Knowledge of the various surgical procedures is assumed, but each authority describes step by step the techniques which he as a veteran surgeon has found best calculated to obviate difficulties.

This volume is ideally organized for quick reference as well as detailed study. Each chapter begins with a table of the points to be discussed and ends with a summary and a list of references. There are abundant illustrations.

**Principles of Ophthalmoscopy.** John K. Erbaugh, M.D. Charles C. Thomas, Springfield, Illinois, 1957. 65 p. $5.50.

With the warning that ocular findings are only part of a medical examination, Dr. Erbaugh provides a brief, graphic guide to the essentials of ophthalmoscopy. Directed to general practitioners, internists and neurologists, the four chapters follow the four parts of a systematic eye-ground examination, noting details which should not be missed.

The text and fully annotated diagrams cover opacities of the ocular media, the disk and its common pathological conditions, functional and organic vascular changes, and retinopathies secondary to functional or organic vascular disease.

The average doctor "is left to his own devices to discover what eye findings mean exactly what," the author comments. Often he tends to misread the findings to confirm a systemic condition the patient is already known to have. Dr. Erbaugh is cautious about assigning too much diagnostic value to ophthalmoscopy. His book should help the physician to evaluate the eye report as an essential part of the medical picture.

**A System of Ophthalmic Illustration.** Peter Hansell, M.R.C.S. Charles C. Thomas, Springfield, Illinois, 1957. 111 p. $5.75.

This monograph was written for the ophthalmic photographer, but contains much of interest to the general medical illustrator and the doctor who

sometimes uses the camera in his office. Mr. Hansell is director of the departments of photography and illustration in the Institute of Ophthalmology and Westminster Medical School, London. He has evolved what he calls a code of practice for the specialist in ophthalmic illustration, which is largely photographic. He covers the subjects of pertinent anatomy, equipment, materials and the techniques of making still or motion pictures of the eye under various conditions. In biomicroscopy, Mr. Hansell says, the artist is more successful than the camera, and he can record the angle of the anterior chamber and gonioscopic appearances as a synthesis of impressions. In retinoscopy the painting and the color photograph complement each other, and a set of transparencies from both "represents the best that illustration can offer."

**PRACTICAL REFRACTION.** Bernard C. Gettes, M.D. Grune & Stratton, New York, 1957. 166 p. $6.50.

Dr. Gettes has written a manual for the inexperienced ophthalmologist "overwhelmed by the maze of geometric and physiologic optics," who has the patient before him. The book therefore omits matters which can be looked up in the textbooks, and deals with the chief refractive errors as they are apt to be encountered, beginning with astigmatism. There is a useful chapter on ophthalmic lenses, and a final one on aids for subnormal vision. Too often, Dr. Gettes remarks, the partially seeing patients are "medically abandoned after they are found to be unamenable to further medical or surgical care, with the result that they drift about aimlessly . . ." He feels that it is the responsibility of the


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ophthalmologist to devote more time to these patients. In his experience any person with at least 5/200 vision is a reasonable candidate for an aid.

**Helping the Visually Handicapped Child in a Regular Class.** Anthony J. Pelone. Bureau of Publications, Teachers College, Columbia University, New York, 1957. 99 p. $1.55.

Since many schools are establishing programs in the regular classes for children with severe visual handicaps there is a need to provide practical information to teachers, supervisors, principals, psychologists and other school staff. This book aims to do this for those who have a responsibility in the educational, social and vocational areas.

In his introduction the author, who is chief of the Bureau for Handicapped Children, N. Y. State Education Department, defines the two categories of the visually handicapped. He emphasizes the developing philosophy that these children should be served in their neighborhood schools whereever possible. The degree of participation which can be expected from them depends on ability, severity of handicap, use of residual vision, home environment, the school situation; also ability to function among a group of seeing children.

Two developments which have helped in many areas are the use of itinerant teachers and the increased availability of essential materials through the Federal Act "to promote education of the blind" whereby the American Printing House for the Blind receives Federal funds to manufacture Braille materials, Talking Books, provide tape recordings and tangible apparatus. These are available for all blind, not just those in special classes. The partially seeing who have vision of 20/200 or less are included.

The three main sections of the book deal with visual handicaps and school adjustment, the partially seeing child in the regular class, and the blind child in the regular class. The regular teacher will find much helpful information relating to anatomy and physiology of the eye; limitations resulting from low vision; importance of treatment and possibility for correction; psychological effects in adjustment to school and home; and services and materials available from state departments, other public and private sources. There is a helpful discussion of the importance of staff attitudes, responsibility toward the child, provision of good visual environment, as well as teaching methods.

**American Medical Association Book of Health.** W.W. Bauer, M.D., Editor. Dell Publishing Company, Inc., New York, 1957. 320 p. 35 cents.

This compilation of articles from the AMA magazine *Today's Health* offers information and advice which is medically sound and stated in colloquial language. It covers hygiene, common health and medical problems, and certain psychiatric and family troubles. There is a chapter on cataract by John E. Eichenlaub, M.D., with a simple explanation about what happens as cataract develops, and the techniques of modern surgery which restore useful vision in most cases. The author emphasizes the importance of early attention to cataract to avoid wasted years of impaired vision, and provides reassuring information about hospital and postoperative care.

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